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## 2024-2025 Academic Catalog

University of Alabama in Huntsville

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## 2024-2025 Academic Catalog



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# General Information

## General Information

### Mission of The University of Alabama in Huntsville

The University of Alabama in Huntsville is a research-intensive, internationally recognized technological university serving Alabama and beyond. Our mission is to explore, discover, create, and communicate knowledge, while educating individuals in leadership, innovation, critical thinking, and civic responsibility and inspiring a passion for learning.

### History

The University of Alabama in Huntsville (UAH) is a part of the University of Alabama System. In June 1969, the University of Alabama Board of Trustees established the University of Alabama System with three independent, autonomous campuses at Huntsville, Birmingham, and Tuscaloosa. Each campus has a separate president who reports to the Board of Trustees through the chancellor of the system.

Academic programs were initiated in Huntsville in 1950; in 1963 degree opportunities at the master's level were provided and in 1964, at the baccalaureate level. The first master's degree based on work begun and completed in Huntsville was awarded in 1964 and the first undergraduate degrees in 1968. Doctoral programs were initiated in physics and engineering in 1971, and the School of Nursing was established the same year. In 1974, in a component of the Alabama School of Medicine, the first full-time medical students began their core clinical experience in Huntsville. (These programs were transferred to direct UAH management in 1995). In the two decades of the 1970s and 1980s, UAH implemented a broad range of undergraduate degree programs; established master's programs in the liberal arts, nursing, and business administration; initiated professional degree programs at both the graduate and undergraduate levels; and inaugurated selected Ph.D. programs in high-technology fields in the sciences and engineering.

UAH is focused to meet the specific needs of scientific and technological enterprises and the cultural and intellectual needs of a rapidly expanding region. It is UAH's intention to be innovative, even experimental, to explore what is new, to evaluate existing programs continually, to develop and establish curricula and pedagogical techniques calculated to help students live and perform well in a complicated environment.

### Accreditation

The University of Alabama in Huntsville is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award bachelor's, master's, specialist, and doctoral degrees. Questions about the accreditation of The University of Alabama in Huntsville may be directed in writing to the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097, by calling (404) 679-4500, or by using information available on SACSCOC's website ([www.sacscoc.org](http://www.sacscoc.org)).

Several UAH programs are accredited by their respective accrediting agencies. Academic programs in chemistry are accredited by the American Chemical Society. Eight undergraduate engineering programs (aerospace engineering, chemical, civil, computer, electrical, industrial and systems, optical, and mechanical) are accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET, Inc.) Both undergraduate and graduate programs in nursing are accredited by the Commission on Collegiate Nursing Education. Computer science holds accreditation from the Computing Accreditation Commission of ABET, Inc. All programs, both undergraduate and graduate, in the College of Business are accredited by the American Assembly of Collegiate Schools of Business (AACSB). In addition, the University of Alabama in Huntsville is an accredited institutional member of the National Association of Schools of Art and Design (NASAD) and the National Association of Schools of Music (NASM). All teacher certification programs are approved by the Alabama State Department of Education (ALSDE). All teacher certification programs are accredited by The *Council for the Accreditation of Educator Preparation* (CAEP).

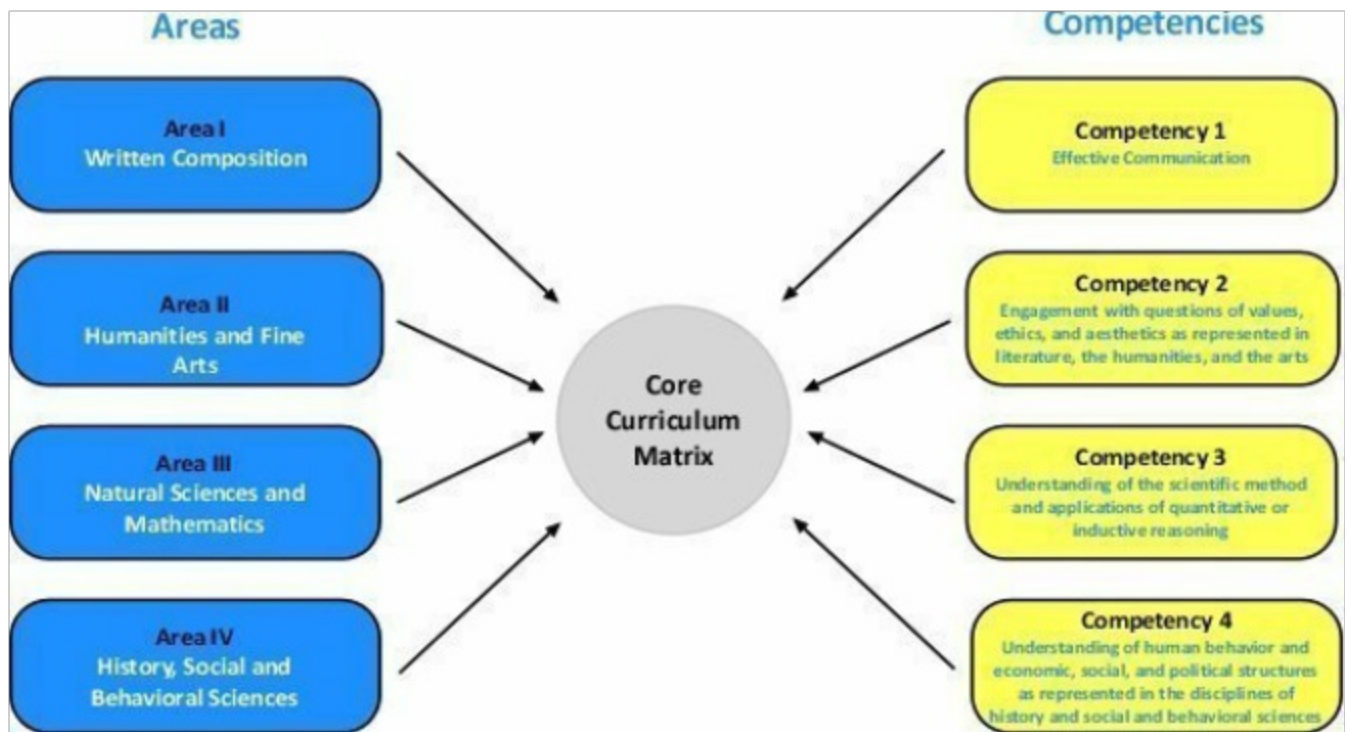
## Academic Calendars

Academic calendars can be found here: <https://www.uah.edu/registrar/calendars>

## Charger Foundations

## Charger Foundations

Welcome to Charger Foundations, a set of courses dedicated to helping you engage with new ideas, complex situations, and diverse perspectives. Encompassing almost one-third of your undergraduate curriculum, the courses of Charger Foundations will enhance your skills, expand your horizons, and encourage you to build on the core values of the Charger Nation: integrity, respect, diligence, excellence, inclusiveness, and diversity. The development of competencies associated with these values begins with Charger Foundations coursework. Below, you will see a matrix providing an overview of the competencies central to your Foundations work and aligned with the Alabama General Studies Commission (AGSC) Area Requirements.



## Core Competencies

The University of Alabama in Huntsville is committed to four core competencies that serve as the foundation for undergraduate general education.

1. Effective communication (Area I)
2. Engagement with questions of values, ethics, and aesthetics as represented in literature, the humanities, and the arts (Area II)
3. Understanding of the scientific method and application of quantitative or inductive reasoning (Area III)

4. Understanding of human behavior and economic, social, and political structures as represented in the disciplines of history and the social and behavioral sciences (Area IV)

These core competencies are consistent with those of the State of Alabama mandated articulation agreement under ACT 94-303, which ensures the transferability of credits from the State's two-year institutions to its four-year institutions.

## Requirements by College

### Colleges of Arts, Humanities, and Social Sciences, Business, Education, Nursing, and Science (41 hours)

AGSC Area	Categories	Required Hours
I	Freshman Composition	3-6
II <sup>1</sup>	Fine Arts	3
	Humanities (literature)	3
	Humanities (non-literature)	3
	Humanities/Fine Arts	3
III	Mathematics	3-4
	Natural Sciences (lab)	8
IV <sup>1</sup>	History	3
	Social & Behavioral Sciences (non-history)	6
	History/Social & Behavioral Sciences	3

<sup>1</sup> Take either 1 EH (Literature) + 2 HY (History) or 2 EH (Literature) + 1 HY (History). Take no more than six hours in a single discipline in Area II or Area IV.

### College of Engineering (35 hours)



AGSC Area	Categories	Required Hours
I	Freshman Composition	3-6
II <sup>1</sup>	Fine Arts	3
	Humanities (literature)	3
	Humanities	3
III	Mathematics	3-4
	Natural Sciences (lab)	8
IV <sup>1</sup>	History	3
	History/Social & Behavioral Sciences	6

1 Take either 1 EH (Literature) + 2 HY (History) or 2 EH (Literature) + 1 HY (History). Take no more than six hours in a single discipline in Area II or Area IV.

Pathways through Charger Foundations will vary by college and major. Confer with your academic advisor to select appropriate Foundationscourses each semester.

## Courses

### Welcome

Welcome to The University of Alabama in Huntsville! We are glad you are joining the Charger Family. UAH has a broad selection of outstanding academic programs while also being a Carnegie R-1, very high research, institution where our students are able to study with experts from within academia, government and industry right here in Huntsville. You are joining one of the top-ranked universities in the nation where we are preparing you for a dynamic future.

College is more than classes. Your academic experience at UAH will be a time when you combine courses that make you more well-rounded with courses that delve into a particular concentration. Our faculty and staff are here to support you and nurture your college experience. We also want you to enjoy your time here on our campus. You will make life-long friends and interact with people who will challenge and encourage you for the better. UAH is the place where you will make memories that will last a lifetime.

This catalog serves as a guidebook as you progress through your studies. In it, you will find detailed information on the requirements for all of the programs offered at UAH. For undergraduate majors, a four-year plan is included for your reference. The section on policies provides essential information such as financial aid details, policies and procedures, and other support services. This valuable tool is available to you at all times. Becoming familiar with the information in it can help make your academic experience more successful but you don't have to do it alone. Your Academic Advisor, the faculty, and other support personnel are also available to help. We are invested in your success.

We are so proud that you are joining the Charger Family. We want your time here at UAH to be filled with intelligent conversations, thought-provoking curricula, and exciting and engaging experiences with people from here in Huntsville and around the globe. You are making the best choice for your education, and we are glad you did!

Go Chargers!



Dr. Dave Puleo

Provost and Executive Vice President for Academic Affairs

## **Archived Catalogs**

To view archived catalogs, please visit <https://louis.uah.edu/catalogs/>.

# Courses

## Accounting

### **ACC201 - ACC & FIN FOR ENTREPRENEURS**

#### **Long Course Title**

ACCOUNTING & FINANCE FOR ENTREPRENEURS

#### **Course Description**

An introductory look at the basic principles of accounting and finance for small businesses: financial statement preparation and analysis, time value of money, sources of capital, cost of capital, job order costing, cost-volume-profit analysis and budgeting.

#### **Credits**

3

### **ACC210 - ACCOUNTING FOR BUSINESS**

#### **Long Course Title**

ACCOUNTING FOR BUSINESS

#### **Course Description**

An introduction to the role accounting information plays in business. Topics include both external and internal uses of accounting information with a particular focus on the accounting cycle, the preparation and interpretation of financial statements, and the role of accounting information in management decision-making.

#### **Credits**

4

### **ACC211 - PRINC OF FINANCIAL ACCOUNTING**

#### **Long Course Title**

PRINCIPLES OF FINANCIAL ACCOUNTING

#### **Course Description**

Introduction to basic concepts that underlie accounting information. Topics include the statement of financial position, the income statement, the accounting cycle, internal control, and ethical and behavioral issues in financial reporting. Emphasis is placed on proper use of financial statement information.

#### **Credits**

3

**ACC212 - PRIN MANAGERIAL ACCOUNTING****Long Course Title**

PRINCIPLES OF MANAGERIAL ACCOUNTING

**Course Description**

An introduction to the use of accounting information for internal planning and control. Topics include cost behavior, cost-volume-profit analysis, product costing, activity-based costing, and budgeting.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)

**ACC308 - ACCOUNTING INFORMATION SYS I****Long Course Title**

ACCOUNTING INFORMATION SYSTEMS I

**Course Description**

First in a two-course sequence to introduce accounting information systems, emphasizing the recording and processing of transactions, analyzing financial and other information, and the creation / visualization of accounting information to support decision making. Excel and accounting software are extensively used to illustrate the concepts and processes covered in this course.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - ACC210 - ACCOUNTING FOR BUSINESS (4)
  - Earn a minimum grade of C- in all of the following:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)

**ACC310 - INTERM FINANCIAL ACCT I****Long Course Title**

INTERMEDIATE FINANCIAL ACCOUNTING I

**Course Description**

First in a two-course sequence to examine the measurement and reporting of income, cash flows, assets, liabilities, and owner's equity in financial statements. Topics include financial statements, current assets and liabilities, investments, revenue recognition, and error analysis.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - ACC210 - ACCOUNTING FOR BUSINESS (4)
  - Earn a minimum grade of C- in all of the following:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)

**ACC310L - LABORATORY****Long Course Title**

INTERMEDIATE ACCOUNTING I LAB

**Course Description**

Intermediate Accounting I Lab provides extra opportunities for students to practice and to develop their problem-solving skills.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - ACC310 - INTERM FINANCIAL ACCT I (3)

**ACC311 - INTERM FINANCIAL ACCT II****Long Course Title**

INTERMEDIATE FINANCIAL ACCOUNTING II

**Course Description**

Second in a two-course sequence to examine the measurement and reporting of income, cash flows, assets, liabilities, and stockholders' equity in financial statements. Topics include long-term assets, short-term and long-term liabilities, income taxes, and stockholders' equity.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC310 - INTERM FINANCIAL ACCT I (3)

**ACC311L - INTERM FINANCIAL ACCT II LAB****Long Course Title**

INTERMEDIATE FINANCIAL ACCOUNTING II LAB

**Course Description**

Intermediate Accounting II lab provides extra opportunities for students to practice and to develop their problem-solving skills.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - ACC311 - INTERM FINANCIAL ACCT II (3)

**ACC313 - INDIVIDUAL/SMALL BUS INCOME TA****Long Course Title**

INDIVIDUAL/SMALL BUSINESS INCOME TAX

**Course Description**

Determination of taxable income, business and non-business deductions, and selected aspects of tax accounting for individuals and sole proprietorships.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ACC210 - ACCOUNTING FOR BUSINESS (4)
  - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)

**ACC408 - ACCOUNTING INFORMATION SYS II****Long Course Title**

ACCOUNTING INFORMATION SYSTEMS II

**Course Description**

Second in a two-course sequence to introduce accounting information systems, emphasizing emerging IS/IT and their impact on businesses, enterprise resource planning, documentation, data analytics, and information security. Excel and SAP are extensively used to solve accounting problems and illustrate the concepts covered in the course.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC308 - ACCOUNTING INFORMATION SYS I (3)
  - ACC310 - INTERM FINANCIAL ACCT I (3)

**ACC413 - CORPORATE & PARTNERSHIP TAXATN****Long Course Title**

CORPORATE AND PARTNERSHIP TAXATION

**Course Description**

Tax accounting for partnerships, corporations, S corporations, estates, and trusts. Tax administration and research are emphasized.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)

**Cross-Listed Course**

ACC513 - CORPORATE & PARTNERSHIP TAXATN

**ACC414 - COST ACCOUNTING****Long Course Title**

COST ACCOUNTING

**Course Description**

Development and use of cost data for external reporting and internal planning and control. Topics include cost modeling, job and process costing, standard costing, activity-based costing, and budgeting. Development of relevant cost information for special purposes is also considered.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC310 - INTERM FINANCIAL ACCT I (3)

**ACC415 - ADV FINANCIAL ACCOUNTING****Long Course Title**

ADVANCED FINANCIAL ACCOUNTING

**Course Description**

This course will cover topics of financial accounting issues regarding consolidated financial statements, business combinations, and intercorporate investments.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC311 - INTERM FINANCIAL ACCT II (3)

**Cross-Listed Course**

ACC515 - ADV FINANCIAL ACCOUNTING



**ACC417 - ACC ST/LOCAL GOV & NON-PROFITS****Long Course Title**

ACCOUNTING FOR STATE & LOCAL GOVERNMENTS AND NON-PROFITS

**Course Description**

This course considers accounting at state and local governments and not-for-profit organizations. Special accounting principles, budgeting, accounting for various funds and account groups are emphasized.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ACC210 - ACCOUNTING FOR BUSINESS (4)
  - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)

**Cross-Listed Course**

ACC517 - ACC FOR STATE/LOCAL GOV/NON-PR

**ACC420 - STATE AND LOCAL TAXATION****Long Course Title**

STATE AND LOCAL TAXATION

**Course Description**

Principles of state income tax, sales and other excise taxes, and property tax. Taxation of interstate commerce will be examined along with US constitutional restrictions on the ability of states to tax interstate commerce.

**Credits**

3

**ACC431 - PRINCIPLES OF AUDITING****Long Course Title**

PRINCIPLES OF AUDITING

**Course Description**

Conceptual and practical foundations of financial statement auditing. The course will include coverage of basic auditing concepts including auditor independence, risk assessment, evidence collection, and reporting. The course will also cover basic audit evidence procedures across the accounting transaction cycles.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ACC308 - ACCOUNTING INFORMATION SYS I (3)
  - ACC310 - INTERM FINANCIAL ACCT I (3)

**ACC433 - FORENSIC ACCOUNTING****Long Course Title**

FORENSIC ACCOUNTING

**Course Description**

Study of the nature and types of fraud. The course covers the tools and techniques used to prevent, investigate, and detect fraud.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC431 - PRINCIPLES OF AUDITING (3)

**Cross-Listed Course**

ACC533 - FORENSIC ACCOUNTING

**ACC440 - BASIC GOV CONTRACT ACCTG****Long Course Title**

BASIC GOVERNMENT CONTRACT ACCOUNTING

**Course Description**

Basic coverage and principles of government contract accounting with an emphasis on the Federal Acquisition Regulation (FAR).

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC414 - COST ACCOUNTING (3)

**ACC441 - ADVANCED GOV CONTRACT ACCTG****Long Course Title**

ADVANCED GOVERNMENT CONTRACT ACCOUNTING

**Course Description**

Advanced issues in government contract cost accounting with an emphasis on the Federal Acquisition Regulation (FAR) and Cost Accounting Standards (CAS) cost allocation guidelines.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC440 - BASIC GOV CONTRACT ACCTG (3)

**Cross-Listed Course**

ACC541 - ADV GOVERNMENT CONTRACT ACCTG

**ACC470 - SEMINAR/CONTEMP ACCTG ISSUES****Long Course Title**

SEMINAR/CONTEMPORARY ACCOUNTING ISSUES

**Course Description**

Current topics in professional accounting.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ACC311 - INTERM FINANCIAL ACCT II (3)

**Cross-Listed Course**

ACC570 - SEMINAR/CONT ACCTG ISSUE

**ACC480 - PROFESSIONAL CERTIFICATION****Long Course Title**

PROFESSIONAL CERTIFICATION

**Course Description**

Review of the four areas of the Accounting Standards and Procedures: Regulation, Business Environment and Concepts, Financial Accounting and Reporting, Auditing and Attestation. Knowledge of the concepts in each of the areas is required for professional accounting certification practice.

**Credits**

3

**Restrictions**

Department Chair Permission Required

**ACC490 - SPECIAL PROJECTS****Long Course Title**

SPECIAL PROJECTS

**Course Description**

Independent study in an area of interest to the student in the fields of accounting.

**Credits**

1 - 3

**Restrictions**

Department Chair Permission Required

**ACC495 - INTERNSHIP IN ACCOUNTING****Long Course Title**

INTERNSHIP IN ACCOUNTING

**Course Description**

Active involvement in a project in a business enterprise, professional organization, or government agency that has particular interest and relevance to the student. Subject to College's guidelines on internships. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis.

**Credits**

1 - 3

**Restrictions**

Must have a class standing of Senior

**ACC513 - CORPORATE & PARTNERSHIP TAXATN****Long Course Title**

CORPORATE AND PARTNERSHIP TAXATION

**Course Description**

Tax accounting for partnerships, corporations, Subchapter S corporations, estates, and trusts. Tax administration and research are emphasized.

**Credits**

3

**Cross-Listed Course**

ACC413 - CORPORATE & PARTNERSHIP TAXATN

**ACC515 - ADV FINANCIAL ACCOUNTING****Long Course Title**

ADVANCED FINANCIAL ACCOUNTING

**Course Description**

The course will cover topics of financial accounting issues regarding consolidated financial statements, business combinations, and intercorporate investments.

**Credits**

3

**Restrictions**

MACC ACC students only

**Cross-Listed Course**

ACC415 - ADV FINANCIAL ACCOUNTING

**ACC516 - ADVANCED COST ACCOUNTING****Long Course Title**

ADVANCED COST ACCOUNTING

**Course Description**

This course explores advanced development and use of cost management data for external reporting and especially internal planning and control. Topics include accounting ethics, the balanced scorecard, cost allocation, inventory management, capital budgeting, management control systems, and performance measurement. Master of Accountancy students only.

**Credits**

3

**Restrictions**

MACC ACC students only

**ACC517 - ACC FOR STATE/LOCAL GOV/NON-PR****Long Course Title**

ACCOUNTING FOR STATE & LOCAL GOVERNMENTS AND NON-PROFITS

**Course Description**

The course considers accounting at state and local governments and not-for-profit organizations. Special accounting principles, budgeting, accounting for various funds and account groups are emphasized.

**Credits**

3

**Cross-Listed Course**

ACC417 - ACC ST/LOCAL GOV & NON-PROFITS

**ACC520 - STATE AND LOCAL TAXATION****Long Course Title**

STATE AND LOCAL TAXATION

**Course Description**

Principles of state income tax, sales, and other excise taxes and property tax. Taxation of interstate commerce will be examined along with US constitutional restrictions on the ability of states to tax interstate commerce.

**Credits**

3

**ACC533 - FORENSIC ACCOUNTING****Long Course Title**

FORENSIC ACCOUNTING

**Course Description**

Study of the nature and types of fraud. The course covers the tools and techniques used to prevent, investigate, and detect fraud.

**Credits**

3

**ACC540 - BASIC GOVERNMENT CONTRACT ACCT****Long Course Title**

BASIC GOVERNMENT CONTRACT ACCOUNTING

**Course Description**

Basic coverage and principles of government contract accounting with an emphasis on the Federal Acquisition Regulation (FAR).

**Credits**

3

**ACC541 - ADV GOVERNMENT CONTRACT ACCTG****Long Course Title**

ADVANCED GOVERNMENT CONTRACT ACCOUNTING

**Course Description**

Advanced issues in government contract cost accounting with an emphasis on the Federal Acquisition Regulation (FAR) and Cost Accounting Standards (CAS) cost allocation guidelines.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ACC540 - BASIC GOVERNMENT CONTRACT ACCT (3)

**Cross-Listed Course**

ACC441 - ADVANCED GOV CONTRACT ACCTG

**ACC570 - SEMINAR/CONT ACCTG ISSUE****Long Course Title**

SEMINAR/CONTEMPORARY ACCOUNTING ISSUES

**Course Description**

Explores current topics in professional accounting.

**Credits**

3

**Restrictions**

MACC ACC students only

**Cross-Listed Course**

ACC470 - SEMINAR/CONTEMP ACCTG ISSUES

**ACC580 - PROFESSIONAL CERTIFICATION****Long Course Title**

PROFESSIONAL CERTIFICATION

**Course Description**

Review of the four areas of the Accounting Standards and Procedures: Regulation, Business Environment and Concepts, Financial Accounting and Reporting, Auditing, and Attestation. Knowledge of the concepts in each of the areas is required for professional accounting certification and practice.

**Credits**

3

**Restrictions**

MACC ACC students only

**ACC590 - SPECIAL PROJECTS****Long Course Title**

SPECIAL PROJECTS

**Course Description**

Independent study in the field of accounting which is of interest to a student.

**Credits**

3

**ACC595 - INTERNSHIP IN ACCOUNTING****Long Course Title**

INTERNSHIP IN ACCOUNTING

**Course Description**

Internship with a business or government agency that has particular relevance to the educational goals of the program. Students must keep a log and submit a report on their internship.

**Credits**

1 - 3

**ACC600 - FOUNDATIONS ACC MANAGERS & ENG****Long Course Title**

FOUNDATIONS OF ACCOUNTING FOR MANAGERS AND ENGINEERS

**Course Description**

A graduate level introduction to the accounting framework and how it is used in evaluating economic conditions and success in decision making organizations. The course considers financial statements, accounting reports, and accounting terminology that constitutes the language of business. The course also introduces the use of accounting information for decision-making, coordinating, motivating, and evaluating.

**Credits**

3



**ACC602 - MANAGERIAL ACCOUNTING****Long Course Title**

MANAGERIAL ACCOUNTING

**Course Description**

Examines the managerial uses of accounting. The focus is on the students gaining a comprehensive understanding of accounting concepts in decision-making, planning, and control.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C in all of the following:
  - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)

**ACC603 - FIN ACTG PROBLEMS & ANALYSIS****Long Course Title**

FINANCIAL ACCOUNTING PROBLEMS & ANALYSIS

**Course Description**

A capstone course covering specialized topics in financial accounting, their impacts on financial statements and basic financial statement analysis tools for decision making. Topics include inventory, pensions, derivative financial instruments, accounting changes and errors, and foreign currency. Must be completed with a grade of B or better.

**Credits**

3

**Restrictions**

MACC ACC students only OR Instructor permission required

**ACC607 - ACCOUNTING ANALYTICS****Long Course Title**

ACCOUNTING ANALYTICS

**Course Description**

Applications of business analytics to support accounting, auditing, and management decision-making. Emphasis on descriptive, visual, and predictive analysis. Master of Accountancy students only.

**Credits**

3

**Restrictions**

MACC ACC students only

**ACC613 - TAX RESEARCH****Long Course Title**

FEDERAL TAX RESEARCH AND PROCEDURE

**Course Description**

This course focuses on the use and understanding of primary and secondary federal tax research materials as they apply to solving complex tax issues confronting tax practitioners. This course's ultimate goal is to help the students solve a tax problem by determining the relevant tax law, finding the relevant law, reconciling any conflicting law and communicating those conclusions. Additionally this course explores the procedural aspect of tax accounting necessary to practice before the Internal Revenue Service.

**Credits**

3

**Restrictions**

MACC ACC students only

**ACC614 - COST MANAGEMENT****Long Course Title**

COST MANAGEMENT

**Course Description**

A study of various approaches to identifying and proactively managing the costs of providing services and products. Special attention is given to the development of cost data useful to managers for decision-making, current issues in cost management, and ethical considerations.

**Credits**

3

**ACC642 - ADV AUDITING TOPICS****Long Course Title**

ADVANCED AUDITING TOPICS

**Course Description**

Coverage of additional expectations and practices in the field of auditing. Broad areas of coverage will include the role of internal auditors, auditing information technology, and system and organization controls (SOC) reports.

**Credits**

3

**Restrictions**

MACC ACC students only

**ACC650 - SELECTED RESEARCH TOPICS****Long Course Title**

SELECTED RESEARCH TOPICS

**Credits**

3

**ACC699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester a student is working on and receiving direction on a masters thesis. A minimum of 2 semesters is required, but no more than six hours of credit is allowed.

**Credits**

1 - 3

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## **Ancient & Medieval Studies**

**AMS229 - ANCIENT & MEDIEVAL WORLDS****Long Course Title**

ANCIENT & MEDIEVAL WORLDS

**Course Description**

A survey of ancient and medieval culture in the Mediterranean world with attention to the ancient cultures of the Near East, Egypt, Greece, and Rome as well as the development of medieval Christian and Muslim civilizations.

**Credits**

3

**Charger Foundations**

Area II: Humanities

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## **Applied Behavior Analysis**

**ABA601 - FUNDAMENTALS OF ABA****Long Course Title**

FUNDAMENTALS OF APPLIED BEHAVIOR ANALYSIS

**Course Description**

This course will introduce students to the basic concepts and principles of behavior analysis including, but not limited to, respondent and operant conditioning, reinforcement and punishment contingencies, extinction, motivating operations, and automatically and socially mediated consequences. The concepts and principles will be discussed with respect to how they are relevant to socially significant behavior.

**Credits**

3

**ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIOR****Long Course Title**

CONCEPTUAL ANALYSIS OF BEHAVIOR

**Course Description**

This course will provide students with an inclusive review of the theoretical foundations of radical behaviorism. The primary focus will be to outline the fundamental philosophical underpinnings of the science of behavior.

**Credits**

3

**ABA603 - RESEARCH METHODS ABA****Long Course Title**

RESEARCH METHODS IN BEHAVIOR ANALYSIS

**Course Description**

The purpose of this course is to introduce students to the fundamentals of behavior analytic research methods. The course will examine the strategies and tactics used in single-subject research to implement socially important behavior change.

**Credits**

3

**ABA604 - APPLIED BEHAVIOR ANALYSIS I****Long Course Title**

APPLIED BEHAVIOR ANALYSIS I

**Course Description**

This course will prepare students to conduct relevant behavioral assessments, and to incorporate assessment results with treatment selection using best practices in the field of applied behavior analysis.

**Credits**

3

**ABA605 - ETHICS IN ABA****Long Course Title**

ETHICS IN BEHAVIOR ANALYTIC RESEARCH AND PRACTICE

**Course Description**

This course will familiarize the student with ethical and professional responsibilities for Board Certified Behavior Analysts. Ethical decision-making processes will be emphasized with respect to the ethical guidelines set forth by the BACB, and the relationship between ethics, policy, and law will be explored.

**Credits**

3

**ABA606 - APPLIED BEHAVIOR ANALYSIS II****Long Course Title**

APPLIED BEHAVIOR ANALYSIS II

**Course Description**

This course expands on the concepts, principles, procedures, and techniques learned in ABA 601, ABA 602, and ABA 604. Students will examine strategies to promote maintenance and generalization of learned skills, prompting strategies, token economies, behavioral contracts, group contingencies, shaping, chaining, motivational systems, and other topics. Students will also be prepared to conduct supervision using the principles of behavior analysis. Students will develop performance expectations based on the context, select individualized, assessment-based goals to develop supervisee skills, develop function-based strategies to improve supervisee performance, and design staff training procedures based on behavior analytic research.

**Credits**

3

**ABA607 - EXPERIMENTAL ABA****Long Course Title**

EXPERIMENTAL ANALYSIS OF BEHAVIOR

**Course Description**

This course will prepare students with understanding how principles of behavior are discovered and described in the context of basic research.

**Credits**

3

**ABA608 - ORGANIZATIONAL BEHAVIOR MGMT****Long Course Title**

ORGANIZATIONAL BEHAVIOR MANAGEMENT

**Course Description**

This course will introduce students to performance analysis and management, supervision, staff training, behavioral systems analysis, organizational culture, and leadership.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ABA601 - FUNDAMENTALS OF ABA (3)
  - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIO (3)
  - ABA603 - RESEARCH METHODS ABA (3)
  - ABA604 - APPLIED BEHAVIOR ANALYSIS I (3)
  - ABA605 - ETHICS IN ABA (3)
  - ABA606 - APPLIED BEHAVIOR ANALYSIS II (3)
  - ABA607 - EXPERIMENTAL ABA (3)

**ABA609 - SUPERVISION & MGMT. IN ABA****Long Course Title**

SUPERVISION AND MANAGEMENT IN APPLIED BEHAVIOR ANALYSIS

**Course Description**

This course will prepare students to conduct supervision using the principles of behavior analysis. Students will develop performance expectations based on the context, select individualized, assessment-based goals to develop supervisee skills, develop function-based strategies to improve supervisee performance, and design staff training procedures based on behavior analytic research.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ABA601 - FUNDAMENTALS OF ABA (3)
    - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIO (3)
    - ABA603 - RESEARCH METHODS ABA (3)
    - ABA604 - APPLIED BEHAVIOR ANALYSIS I (3)
    - ABA605 - ETHICS IN ABA (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - ABA606 - APPLIED BEHAVIOR ANALYSIS II (3)
    - ABA607 - EXPERIMENTAL ABA (3)

**Equivalent Course(s)****ABA610 - ABA THESIS ORIENTATION****Long Course Title**

ABA THESIS ORIENTATION

**Course Description**

This course is an orientation to the goals of a thesis, the requirements of a thesis, and the thesis process at UAH. Within this broad context, we will review the organization and planning of a thesis and theoretical and practical approaches to the process. This is a 0-credit course that orients students to the overall thesis requirements. Instruction is provided in the form of supervision/mentorship/advisement. This includes multiple meetings between the student, peers, and the thesis advisor through telephone, Zoom, and e-mail contact.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - ABA601 - FUNDAMENTALS OF ABA (3)
  - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIO (3)
  - ABA605 - ETHICS IN ABA (3)

## **ABA611 - ABA THESIS PROPOSAL**

### **Long Course Title**

ABA THESIS PROPOSAL

### **Course Description**

The goal of this course is to produce an approved thesis proposal. Students will first be required to develop an empirical research question related to behavior analysis. In general, it is expected that the research question will involve the manipulation of independent variables to determine their functional relation to the dependent variable(s). Students will then investigate the research literature relevant to that question and write a literature review in APA format. Students will then develop a formal written research proposal that uses an appropriate single-subject research design, orally present and defend the proposed study to their committee, and, when appropriate, develop a request for approval to conduct the research from UAH's Institutional Review Board (IRB). While completing course requirements, students must adhere to all guidelines provided in the UAH Graduate School Thesis, Dissertation, and DNP Project Manual. Students will also be expected to finalize their thesis committee. Only upon successful completion of this course will students be permitted to continue enrolling in the thesis course sequence. Instruction is provided in the form of supervision/mentorship/advisement. This includes a minimum of monthly meetings between the student and the thesis advisor through telephone, Zoom, and e-mail contact.

### **Credits**

2

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - ABA610 - ABA THESIS ORIENTATION (0)
  - Earn a minimum grade of C- in all of the following:
    - ABA601 - FUNDAMENTALS OF ABA (3)
    - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIOR (3)
    - ABA605 - ETHICS IN ABA (3)



## **ABA612 - ABA THESIS IMPLEMENTATION**

### **Long Course Title**

ABA THESIS IMPLEMENTATION

### **Course Description**

The goal of this course is to implement the procedures outlined in the thesis proposal. To pass this course, students must complete the data collection and analysis as outlined in their approved thesis proposal. While completing course requirements, students must adhere to all guidelines provided in the UAH Graduate School Thesis, Dissertation, and DNP Project Manual. Instruction is provided in the form of supervision/mentorship/advisement. This includes several meetings between the student and the thesis advisor through telephone, Zoom, and e-mail contact.

### **Credits**

2

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - ABA610 - ABA THESIS ORIENTATION (0)
  - Earn a minimum grade of C- in all of the following:
    - ABA611 - ABA THESIS PROPOSAL (2)
    - ABA601 - FUNDAMENTALS OF ABA (3)
    - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIOR (3)
    - ABA603 - RESEARCH METHODS ABA (3)
    - ABA604 - APPLIED BEHAVIOR ANALYSIS I (3)
    - ABA605 - ETHICS IN ABA (3)

## **ABA613 - ABA THESIS ADVANCEMENT**

### **Long Course Title**

ABA THESIS ADVANCEMENT

### **Course Description**

This course is an advancement of the thesis process at UAH. Within this broad context, we will review student progress and prepare for data collection and the final thesis. IRB approval for thesis procedures is required to pass this course. While completing course requirements, students must adhere to all guidelines provided in the UAH Graduate School Thesis, Dissertation, and DNP Project Manual. Instruction is provided in the form of supervision/mentorship/advisement. This may include meetings between the student and the thesis advisor through telephone, Zoom, or e-mail contact.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - ABA610 - ABA THESIS ORIENTATION (0)
  - Earn a minimum grade of C- in all of the following:
    - ABA601 - FUNDAMENTALS OF ABA (3)
    - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIOR (3)
    - ABA603 - RESEARCH METHODS ABA (3)
    - ABA604 - APPLIED BEHAVIOR ANALYSIS I (3)
    - ABA605 - ETHICS IN ABA (3)
    - ABA611 - ABA THESIS PROPOSAL (2)
    - ABA612 - ABA THESIS IMPLEMENTATION (2)

## **ABA614 - ABA THESIS DEFENSE**

### **Long Course Title**

ABA THESIS DEFENSE

### **Course Description**

Students will complete writing the thesis manuscript, submit the final manuscript, and receive final approval from the thesis committee and Department Chair. In addition, the student must pass an oral defense of the thesis. Students must complete all components in accordance with the UAH Graduate School Thesis, Dissertation, and DNP Project Manual. If these requirements are not met, the student will not receive credit in the course and must re-take it which could delay graduation. Instruction is provided in the form of supervision/mentorship/ advisement. This includes several meetings between the student and the thesis advisor through telephone, Zoom, and e-mail contact.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ABA601 - FUNDAMENTALS OF ABA (3)
    - ABA602 - CONCEPTUAL ANALYSIS OF BEHAVIOR (3)
    - ABA603 - RESEARCH METHODS ABA (3)
    - ABA604 - APPLIED BEHAVIOR ANALYSIS I (3)
    - ABA605 - ETHICS IN ABA (3)
    - ABA606 - APPLIED BEHAVIOR ANALYSIS II (3)
    - ABA607 - EXPERIMENTAL ABA (3)
    - ABA609 - SUPERVISION & MGMT. IN ABA (3)
    - ABA611 - ABA THESIS PROPOSAL (2)
    - ABA612 - ABA THESIS IMPLEMENTATION (2)
    - ABA613 - ABA THESIS ADVANCEMENT (1)
  - Earn a minimum grade of S in all of the following:
    - ABA610 - ABA THESIS ORIENTATION (0)

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## **Art History**

### **ARH100 - ARH SUR: ANCIENT-MEDIEVAL**

#### **Long Course Title**

ART HISTORY SURVEY: ANCIENT TO MEDIEVAL

#### **Course Description**

Survey of Pre-historic to Medieval art. Course emphasizes study of cultural contexts that fostered art and introduces students to basic analytic tools and theories of art history. Very little in art is completely new. Learn about the visual traditions that shaped the culture we live in today.

#### **Credits**

3

#### **Charger Foundations**

Area II: Fine Art

**ARH101 - ARH SUR: RENAISSANCE-MODERN**  
**Long Course Title**

ART HISTORY SURVEY: RENAISSANCE TO MODERN

**Course Description**

Survey of the Major Western works of art produced since the Renaissance. Relates stylistic change to changes in historical and cultural contexts. Introduces students to basic analytic tools and theories of art history.

**Credits**

3

**Charger Foundations**

Area II: Fine Art

**ARH103 - ARH SUR: WORLD ART**  
**Long Course Title**

ART HISTORY SURVEY: WORLD ART

**Course Description**

Survey of visual culture in India, the Far East, the Americas, the Pacific, and Africa. Focuses on relationships among art, religious beliefs, politics, and cultural practices. Studying the visual traditions of other cultures fosters greater understanding as our world becomes more global. Use the analytical tools and theories of art history to foster understandings of global cultures.

**Credits**

3

**Charger Foundations**

Area II: Fine Art

**ARH120 - ARH SUR: SPECIAL TOPICS**  
**Long Course Title**

ART HISTORY SURVEY: SPECIAL TOPICS

**Course Description**

Course allows for survey-style exploration of special topics in art history and related fields such as archaeology.

**Credits**

3

## **ARH306 - COLLAPSE OF CIVILIZATIONS**

### **Long Course Title**

COLLAPSE OF CIVILIZATIONS

### **Course Description**

Course investigates why some cultures succeed and others fail. Examine factors that lead to collapse to address a question relevant to the contemporary world: How severe do internal stresses have to become before relatively minor climate shifts can trigger a widespread cultural collapse?

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH103 - ARH SUR: WORLD ART (3)

## **ARH309 - CONTEMPORARY ART HISTORY**

### **Course Description**

This course considers major movements in contemporary art from c.1945 to the early 2000s through historical, political, social, philosophical, and literary frameworks. The course leads students in critical readings of selected art historical discourse and interdisciplinary scholarship in order to examine key concepts and issues in art that exemplify the ever-shifting terrain of contemporary art.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)

## **ARH311 - PHILOSOPHY OF ART**

### **Long Course Title**

PHILOSOPHY OF ART

### **Course Description**

What is Art? This course explores and interrogates a wide range of contrasting aesthetic theories within the Western tradition, with particular emphasis on the relation between artistic expression and philosophical frameworks.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in at least 1 of the following:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - Earn a minimum grade of D- in all of the following:
    - ARH103 - ARH SUR: WORLD ART (3)

### **Restrictions**

Art majors only

**ARH320 - SPECIAL TOPICS IN ART HISTORY****Long Course Title**

SPECIAL TOPICS IN ART HISTORY

**Course Description**

Developed based on student and faculty interest, special topics courses explore content and issues not currently emphasized in the curriculum. Courses may focus on a particular issue like Women in Antiquity or a particular genre such as Modern Architecture.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH309 - CONTEMPORARY ART HISTORY (3)

**ARH395 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Directed, independent study on a topic prearranged with instructor, normally as an outgrowth of a 300-level art history course. Weekly mentoring meetings with instructor help student develop a workable thesis, conduct research, and manage a project that results in a well-argued paper.

**Credits**

3

**ARH400 - SENIOR THESIS****Long Course Title**

SENIOR THESIS

**Course Description**

Culminating experience for students with an Art History concentration. With the help of a faculty mentor, student will choose a topic, conduct research, and construct a well-argued paper. Student will present this research to the faculty, displaying skills valuable in most careers.

**Credits**

3

## **ARH401 - ANCIENT GREEK ART**

### **Long Course Title**

ANCIENT GREEK ART

### **Course Description**

Art of ancient Greece from the Bronze Age to the death of Cleopatra. Focuses on relationships of art to philosophy, politics, religion, literature, and drama. Greek art and culture heavily influenced our education system as well as the appearance of cities from Washington, DC to Huntsville, AL.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

## **ARH402 - MEDIEVAL ART**

### **Long Course Title**

MEDIEVAL ART

### **Course Description**

Examines architecture, sculpture, manuscripts, metalwork, textiles, and stained glass from the fall of Rome to the Gothic era. In addition to a chronological study of the period, engage in case studies on courtship, warfare, religion, and cultural interactions that influenced practices today.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

## **ARH403 - RENAISSANCE ART**

### **Long Course Title**

RENAISSANCE ART

### **Course Description**

The Renaissance supposedly ushered in advances in arts, humanities, and sciences. This course looks at regional trends in Italy as well as the rest of Europe to see what is innovative about this era considered a high point in Western culture, rather than focusing on great masters.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)

## **ARH404 - EARLY 20TH-CENTURY MODERNISM**

### **Long Course Title**

EARLY TWENTIETH-CENTURY MODERNISM

### **Course Description**

This course examines major movements in European and American art from the 1890s to the 1940s through historical, political, social, philosophical, and literary frameworks. The course leads students in critical readings of selected art historical and interdisciplinary scholarship.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)

## **ARH405 - ANCIENT ROMAN ART**

### **Long Course Title**

ANCIENT ROMAN ART

### **Course Description**

Roman visual culture from the foundation of the city to its fall. Explore case studies such as the age of Augustus, Pompeii, Roman engineering, the Provinces, games and spectacle. Learn about the Roman legacy and consider its impact on modern Western Culture.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

## **ARH407 - IMPRESSIONISM & POST-IMP**

### **Long Course Title**

IMPRESSIONISM & POST-IMPRESSIONISM

### **Course Description**

European and American art from 1860 to 1900 examined through historical, political, social, philosophical, theoretical and literary perspective. This course guides the students in critical reading of selected art historical and interdisciplinary scholarship.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)

**ARH408 - OBJECT LESSONS:1985 TO PRESENT****Long Course Title**

OBJECT LESSONS:1985 TO PRESENT

**Course Description**

This seminar employs the object lesson as its methodological basis, considering its own objects--works from contemporary art since c. 1985. In doing so, the seminar's "lessons" will explore how the material manifestations of contemporary art provide insight not only into strategies of art-making but also allow for explorations into the broader cultural context as well as more abstract and philosophical concerns.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH309 - CONTEMPORARY ART HISTORY (3)

**Charger Foundations**

no

**ARH410 - NINETEENTH CENTURY ART****Long Course Title**

NINETEENTH CENTURY ART

**Course Description**

European and American art from 1780 to 1860 examined through historical, political, social, philosophical, theoretical and literary perspectives. Course guides students in critical reading of selected art historical and interdisciplinary scholarship.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)

**ARH412 - EARLY MODERN PRINT: 1450-1800****Course Description**

This art history seminar surveys the graphic arts from the fifteenth to the turn of the nineteenth century. Each week focuses on a major development in the history of printmaking like relief and intaglio methods of production; introduction of privileges and the birth of intellectual property; and the power of print to enact religious and socio-political reform.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

**Charger Foundations**

no



## **ARH413 - ART AND THE APOCALYPSE**

### **Course Description**

This art history seminar examines how the end of the world is represented in the arts of medieval and early modern Europe. Students will analyze apocalyptic iconography across media, including sculpture, painting, manuscript illumination, and print.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

### **Charger Foundations**

no

## **ARH414 - BAROQUE ART AND ARCHITECTURE**

### **Long Course Title**

BAROQUE ART AND ARCHITECTURE

### **Course Description**

This art history seminar examines European painting, sculpture, and architecture of the late-16th and 17th centuries. In France, England, and the Netherlands, artists of the “Golden Age” contributed to the rise of new subjects in art including still life, landscape, and portraiture. In Italy and Spain, Baroque masters embraced drama in works commissioned by royalty and the Church.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)

### **Charger Foundations**

no

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## **Art Studio**

## **ARS123 - 2D DESIGN & COLOR THEORY**

### **Long Course Title**

2D DESIGN & COLOR THEORY

### **Course Description**

Introduction to the principles and elements of design and color theory. Assignments explore design concepts and an understanding of color. Course stresses the development of visual and manual skills, problem solving, critical thinking, and the tools and materials used in the making of art.

### **Credits**

3

**ARS140 - 3D DESIGN****Long Course Title**

3D DESIGN

**Course Description**

Course introduces students to fundamental principles pertaining to the creation of three-dimensional art and prepares them for more advanced processes. Processes include, but are not limited to, drawing for sculpture, model making, woodworking, and sewing.

**Credits**

3

**ARS160 - DRAWING: FOUNDATIONS****Long Course Title**

DRAWING: FOUNDATIONS

**Course Description**

Introduction to principles, materials, and techniques of drawing. Observational drawing and exercises teach students visual skills and introduce aesthetics and artistic expression. Class covers visual and manual skills, problem solving, critical thinking, and the tools and materials artists use.

**Credits**

3

**Charger Foundations**

Area II: Fine Art

**ARS210 - GAME DESIGN: INTRODUCTION****Long Course Title**

GAME DESIGN: INTRODUCTION

**Course Description**

This course is an introduction to the principles and processes of game design. Students will play, research, design, modify, and prototype tabletop games throughout the semester to gain a better understanding of game design.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS160 - DRAWING: FOUNDATIONS (3)

## **ARS220 - ANIMATION: INTRODUCTION**

### **Long Course Title**

ANIMATION: INTRODUCTION

### **Course Description**

Course is an introduction to the principles of 3D computer generated imaging including modeling, texturing, rigging, animating, lighting, and rendering, as well as production processes such as storyboarding, sound design, and editing that together provide a basic working knowledge of 3D CGI.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS123 - 2D DESIGN & COLOR THEORY (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)

## **ARS230 - GRAPHIC DESIGN: INTRODUCTION**

### **Long Course Title**

GRAPHIC DESIGN: INTRODUCTION

### **Course Description**

Introduction to graphic design theories, principles, and software. Instruction in the basics of graphic design through practical understanding of visual communication and logistics of advertising, conceptual thinking, and creative exploration. Course is a primer for the Macintosh platform.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS123 - 2D DESIGN & COLOR THEORY (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)

## **ARS240 - SCULPTURE: INTRODUCTION**

### **Long Course Title**

SCULPTURE: INTRODUCTION

### **Course Description**

Students will develop and explore their ideas using a variety of traditional and non-traditional tools, materials, and processes. Assemblage, subtraction, modeling, 3D modeling/printing, and casting processes will be addressed, preparing students for entrance into advanced coursework.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS140 - 3D DESIGN (3)

## **ARS250 - PHOTOGRAPHY: INTRODUCTION**

### **Course Description**

Fundamentals and techniques of the digital camera, image capture, digital scanning, and image manipulation with Adobe Photoshop software. Basic printing and image preparation for the web and other media will also be explored. Basic Mac OS and/or Windows skills, and digital camera required.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:

## **ARS260 - DRAWING II**

### **Course Description**

Course further develops drawing skills through study and practice. Materials, design, and creative ideas are explored. Critical thinking and visual analysis are used in critique. Students continue to develop visual and manual skills, problem solving abilities, and the use of tools and materials.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS123 - 2D DESIGN & COLOR THEORY (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)

## **ARS270 - PAINTING: INTRODUCTION**

### **Long Course Title**

PAINTING: INTRODUCTION

### **Course Description**

Students learn basic painting techniques, materials, and mediums. Problem solving assignments use two-dimensional design and color theory concepts and practices. Students are required to observe and think critically for critique and discussion.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS123 - 2D DESIGN & COLOR THEORY (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)

## **ARS280 - PRINTMAKING: INTRODUCTION**

### **Long Course Title**

PRINTMAKING: INTRODUCTION

### **Course Description**

Introduction to basic areas of printmaking, including planographic, intaglio, and relief processes. Expands 2-D design concepts, color theory, and drawing skills. Develops proficiency with printmaking tools and materials as well as critical thinking and problem solving skills.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS123 - 2D DESIGN & COLOR THEORY (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)

## **ARS311 - GAME DESIGN: SCRIPTING & DES I**

### **Long Course Title**

GAME DESIGN: SCRIPTING & DESIGN I

### **Course Description**

This course introduces students with limited programming experience to video game scripting using a visual programming language. Students will learn tools and techniques to design and script their own video games.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - ARS210 - GAME DESIGN: INTRODUCTION (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS121 - COMPUTER SCIENCE I (3)

## **ARS321 - ANIMATION: ORGANIC MODELING**

### **Long Course Title**

ANIMATION: ORGANIC MODELING

### **Course Description**

This course will focus on organic mesh design and production as well as surface and lighting properties for creating portfolio quality, real-time, and pre-rendered 3D organic models.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

## **ARS322 - ANIMATION: 3D ANIMATION**

### **Long Course Title**

ANIMATION: 3D ANIMATION

### **Course Description**

Course explores fundamental animation principles (timing/spacing, overlap, squash/stretch, anticipation, etc) along with digital animation tools (rigging, inverse kinematics, keyframing, etc) to help students gain experience and a better understanding of the role of CG animators.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

## **ARS324 - ANIMATION: TECHNICAL ARTS**

### **Long Course Title**

ANIMATION: TECHNICAL ARTS

### **Course Description**

Course will concentrate on areas of production that require both technical and art skill, often called technical art. Topics include in-depth rigging, automating workflows, simulations, writing custom tools, writing shaders, etc. Students will gain experience in a sought-after production role.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

## **ARS325 - ANIMATION: HARD SURF MODELING**

### **Long Course Title**

ANIMATION: HARD SURFACE MODELING

### **Course Description**

This course will focus on hard surface mesh design and production as well as material and lighting properties for creating portfolio quality, real-time, and pre-rendered 3D hard surface models.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

**ARS327 - ANIMATION: VISUAL STORY DEV****Long Course Title**

ANIMATION: VISUAL STORY DEVELOPMENT

**Course Description**

This course focuses on developing visual storytelling as a graphic language for storyboarding films and animations as well as creating comics and graphic novels. The principles of sequential art will be examined and applied to projects throughout the semester. This is a 2D course and is digital drawing intensive.

**Credits**

3

**Prerequisites**

- Earned minimum grade of D- or concurrently enrolled in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

**ARS328 - ANIMATION: CONCEPT ART****Long Course Title**

ANIMATION: CONCEPT ART

**Course Description**

This class will cover the basics of concept art for the entertainment industry and related fields. Games, characters, and stories start out as ideas and concept art is how those ideas are visually developed, iterated, and refined before going into production. This course is digital drawing intensive.

**Credits**

3

**Prerequisites**

- Earned minimum grade of D- or concurrently enrolled in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

**ARS329 - ANIMATION: 2D ANIMATION****Long Course Title**

ANIMATION: 2D ANIMATION

**Course Description**

This course focuses on creating traditional and tweened 2D animations using current digital tools and techniques. The principles of animation will be examined through a variety of exercises and applied to main projects. This course is digital drawing intensive.

**Credits**

3

**Prerequisites**

- Earned minimum grade of D- or concurrently enrolled in all of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)

## **ARS330 - GRAPHIC DESIGN: PRINT MEDIA I**

### **Long Course Title**

GRAPHIC DESIGN: PRINT MEDIA I

### **Course Description**

Course emphasizes creative exploration in design and layout. Students will learn intermediate methods of graphic design. Focus for this course is additional study in design, creative thinking, and industry software.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)

## **ARS332 - GRAPHIC DESIGN: WEB DESIGN**

### **Long Course Title**

GRAPHIC DESIGN: WEB DESIGN

### **Course Description**

Beginning course in web design using HTML and CSS to build effective and creative websites with strong user-centric design. Understanding HTML and current best web design practices is essential to web design and development.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)

## **ARS333 - GRAPH DES: WATERCOLOR & DIG I**

### **Long Course Title**

GRAPHIC DESIGN: WATERCOLOR & DIGITAL I

### **Course Description**

Graphic design from an illustration and fine arts perspective. Course explores different creative directions using current software in combination with traditional watercolor media. Students will learn how to handle watercolor, develop creative concepts, and use software to support their design.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)



**ARS334 - GRAPH DES: WEB USER EXPER I****Long Course Title**

GRAPHIC DESIGN: WEB USER EXPERIENCE I

**Course Description**

Course places emphasis on user experience, web animation, and application for the purpose of media development. This course focuses on the understanding of user experience and user interface design through the study of how consumers interact with media.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)

**ARS335 - GRAPHIC DESIGN: TYPOGRAPHY I****Long Course Title**

GRAPHIC DESIGN: TYPOGRAPHY I

**Course Description**

Course studies type design and the usage of basic letterforms, typographic contrast, and hierarchy of information, major type families and characteristics, the history of typography design, creativity, and grid layout.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)

**ARS340 - SCULP: FABRICATION I****Long Course Title**

SCULPTURE: FABRICATION I

**Course Description**

Exploration of a variety of assemblage processes including wood, metal, and fabric construction. Emphasis is placed on idea development and investigating a wide range of forms and materials. Course instruction includes welding, CNC plasma cutting, advanced wood joinery, and wood bending.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS240 - SCULPTURE: INTRODUCTION (3)

**ARS341 - SCULP: CARVING I****Long Course Title**

SCULPTURE: CARVING I

**Course Description**

Carving stone, wood, and other materials is investigated with emphasis placed on developing the ability to see and release forms and on the unique relationship evolving between maker and material. Instruction also includes CNC routing, wood turning, and sharpening techniques.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS240 - SCULPTURE: INTRODUCTION (3)

**ARS342 - SCULP: CASTING I****Long Course Title**

SCULPTURE: CASTING I

**Course Description**

Course instruction focuses on mold making processes and materials involved in casting objects using both traditional and non-traditional methods. Metal casting is the principle focus of this course with investigation surrounding how digital practices continue to affect this age-old practice.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS240 - SCULPTURE: INTRODUCTION (3)

**ARS347 - SPACE AND PLACE****Long Course Title**

SPACE AND PLACE

**Course Description**

Investigation of installation and environmental art practices including site-specific work, public art and interactive environments. Students will explore works that relate to the experience of place and develop the potential to use 2D, 3D, and time-based works to transform space.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of D-
  - 3 hours from any ARS 200 - 299 level course(s)

## **ARS348 - DIGITAL FABRICATION**

### **Long Course Title**

DIGITAL FABRICATION

### **Course Description**

Digital Fabrication focuses on the action of using digital processes to design and create physical artwork. Several digital software programs are explored along with processes for digital fabrication machines (CNC milling, CNC plasma cutting, laser-cutting, 3D printing, and digital die-cutting machines.)

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ARS220 - ANIMATION: INTRODUCTION (3)
  - ARS240 - SCULPTURE: INTRODUCTION (3)
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - ARS330 - GRAPHIC DESIGN: PRINT MEDIA I (3)

## **ARS350 - PHOTO: DIGITAL I**

### **Long Course Title**

PHOTO: DIGITAL I

### **Course Description**

Digital image creation and editing techniques using postproduction software, digital printing, and image presentation. Course addresses contemporary fine art issues and an introduction to studio lighting. Students are required to provide their own digital camera with RAW settings.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)

## **ARS352 - PHOTO: DARKROOM I**

### **Long Course Title**

PHOTO: DARKROOM I

### **Course Description**

Black and white film and darkroom techniques explored as a means of expression. Course discusses artistic styles and the history of twentieth-century black and white photography. Students will produce a final fine art portfolio. 35mm camera required (available through department if necessary).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)

**ARS353 - PHOTO; DRKRM, HIST & EXPER I****Long Course Title**

PHOTO: DARKROOM, HISTORIC & EXPERIMENTAL I

**Course Description**

Introduction to alternative ways of working in the darkroom with an emphasis on historical photographic techniques. Experimentation with analog and digital materials are encouraged to produce a final portfolio. Students need a film camera (available through the department if necessary).

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)

**ARS355 - PHOTO: DOCUMENTARY I****Long Course Title**

PHOTO: DOCUMENTARY I

**Course Description**

Students study "truth" in the image using the documentary style of photography. Emphasis on the history of the genre and how to work in the field with attention to ethical issues. Students are required to provide their own digital camera with RAW settings.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS350 - PHOTO: DIGITAL I (3)

**ARS360 - DRAWING: FIGURE****Long Course Title**

DRAWING: FIGURE

**Course Description**

Drawing with an emphasis on life drawing utilizing both traditional and contemporary methods and materials. Figure drawing is the traditional cornerstone of art training, and includes anatomy, observation, and advanced technical skills. Nude models will be used.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS260 - DRAWING II (3)

## **ARS375 - PAINTING: FIGURE I**

### **Course Description**

Investigation of figure painting, focusing on technical and philosophical approaches to using the human form as subject matter. Nude models will be used. Students are guided in the development of artistic facility and vocabulary.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS270 - PAINTING: INTRODUCTION (3)

## **ARS376 - PAINTING: CONTEMPORARY I**

### **Long Course Title**

PAINTING: CONTEMPORARY I

### **Course Description**

Contemporary approaches toward painting are explored through technical and conceptual exercises based on contemporary painting practices. Students are guided in the development of artistic facility and personal expression.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS270 - PAINTING: INTRODUCTION (3)

## **ARS377 - PAINTING: MIXED MEDIA I**

### **Long Course Title**

PAINTING: MIXED MEDIA I

### **Course Description**

Exploration of painting with mixed and non-traditional media, including the use of assemblage and collage processes, shaped or contoured canvases, and related media. Students are guided in the development of artistic facility and a vocabulary of visual symbols for personal expression.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS270 - PAINTING: INTRODUCTION (3)

**ARS381 - PRINT: ETCHING & RELIEF I****Long Course Title**

PRINT: ETCHING & RELIEF I

**Course Description**

Etching and relief print processes are explored through woodblock, linoleum cut, aquatint and line etching. Through demonstrations, critical analysis, and making prints, students develop skills with tools, techniques and concepts associated with etching and relief printmaking

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS280 - PRINTMAKING: INTRODUCTION (3)

**ARS383 - PRINT: SCREENPRINT I****Long Course Title**

PRINT: SCREENPRINT I

**Course Description**

Studio practices in screenprint methods are used to synthesize technical skills and develop sophisticated aesthetic modes of printmaking. Through demonstrations, critical analysis, and making prints, students will consider complex ways in which printmaking becomes a tool for artistic expression.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS280 - PRINTMAKING: INTRODUCTION (3)

**ARS385 - PRINT: BOOK ARTS I****Long Course Title**

PRINT: BOOK ARTS I

**Course Description**

Students develop skills and aesthetic modes of narrative work through book arts. Emphasis on gaining skills in cutting, folding, measuring, gluing, sewing, printing, and binding. Students develop form and content through the exploration of structural mock ups and personal work.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ARS140 - 3D DESIGN (3)
  - ARS260 - DRAWING II (3)

**ARS387 - PRINT: MONOPRINT & LITHOGRAPHY I****Long Course Title**

PRINT: MONOPRINT & LITHOGRAPHY I

**Course Description**

Monoprint and lithography are explored through planographic print processes. Through demonstrations, critical analysis, and making prints, students develop skills with tools techniques and concepts associated with monoprint and lithography printmaking.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS280 - PRINTMAKING: INTRODUCTION (3)

**ARS390 - PORTFOLIO DEVELOPMENT I****Long Course Title**

PORTFOLIO DEVELOPMENT I

**Course Description**

This course is focused on helping students create high-quality portfolio work that demonstrates their skills and creative capabilities as artists. Multidisciplinary and discipline-specific sections are offered. Please see your advisor for details.

**Credits**

3

**Restrictions**

Advisor permission required

**ARS395 - SP TOPICS IN STUDIO ART****Long Course Title**

SPECIAL TOPICS IN STUDIO ART

**Course Description**

Special topics on particular media or conceptual approaches to art. This course allows the student to explore new media and/or critical theoretical approaches to contemporary art.

**Credits**

3

**Restrictions**

Instructor permission required

**ARS415 - ANIMATION: TEAM GAME DESN I****Long Course Title**

ANIMATION: TEAM GAME DESIGN I

**Course Description**

Students in this collaborative game design and development course work in teams to conceptualize and create working video games in one semester. Students will gain an understanding of industry standard tools and practices, as well as get valuable experience working in teams.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ARS321 - ANIMATION: ORGANIC MODELING (3)
  - ARS322 - ANIMATION: 3D ANIMATION (3)
  - ARS324 - ANIMATION: TECHNICAL ARTS (3)
  - ARS325 - ANIMATION: HARD SURF MODELING (3)
  - ARS329 - ANIMATION: 2D ANIMATION (3)
  - ARS311 - GAME DESIGN: SCRIPTING & DES I (3)
  - CS221 - COMP SCI II: DATA STRUCTURES (3)

**ARS416 - ANIMATION: TEAM GAME DESN II****Long Course Title**

ANIMATION: TEAM GAME DESIGN II

**Course Description**

In this advanced collaborative game design and development course, students take on leadership production roles on their game teams and help mentor junior members. Students will gain experience as team leads and learn to coordinate multidisciplinary projects.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS415 - ANIMATION: TEAM GAME DESN I (3)



**ARS425 - ANIMATION: SHORT FILM I****Long Course Title**

ANIMATION: SHORT FILM I

**Course Description**

In this course, students will conceptualize and fully produce 3D animated short films. The story, characters, and world will be built from the ground up, and the production pipeline will mirror common industry practices. Experience with 3D is essential, but expertise in a particular discipline is not as critical as being driven to learn and create.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - ARS321 - ANIMATION: ORGANIC MODELING (3)
  - ARS322 - ANIMATION: 3D ANIMATION (3)
  - ARS324 - ANIMATION: TECHNICAL ARTS (3)
  - ARS325 - ANIMATION: HARD SURF MODELING (3)
  - ARS329 - ANIMATION: 2D ANIMATION (3)

**ARS426 - ANIMATION: SHORT FILM II****Long Course Title**

ANIMATION: SHORT FILM II

**Course Description**

In this advanced short film production course students will take on leadership roles within their discipline and help guide the conceptualization and production of 3D animated short films. Advanced understanding of an aspect of production and short film pipelines is expected.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS425 - ANIMATION: SHORT FILM I (3)

**ARS430 - GRAPHIC DESIGN: PRINT MEDIA II****Long Course Title**

GRAPHIC DESIGN: PRINT MEDIA II

**Course Description**

Course emphasizes print production, special applications of print design, environmental graphics, and advertising campaigns. Focus is on mastering print media methods and creating portfolio enhancement projects.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS330 - GRAPHIC DESIGN: PRINT MEDIA I (3)

**ARS432 - GRAPH DES: SENIOR PROJ MGMT****Long Course Title**

GRAPHIC DESIGN: SENIOR PROJECT MANAGEMENT

**Course Description**

Students develop and/or manage one or more major web projects for clients as well as a professional site for students themselves. The course covers practical application of current best web design practices including user-centric design, HTML, CSS, Content Management Systems, and current web standards.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)

**ARS433 - GRAPH DES: WATERCOLOR & DIG II****Long Course Title**

GRAPHIC DESIGN: WATERCOLOR & DIGITAL II

**Course Description**

Course extends a student's knowledge of digital and traditional watercolor media. The purpose of this course is to further explore creative techniques, develop a direction, and apply new techniques combining media.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS333 - GRAPH DES: WATERCOLOR & DIG I (3)

**ARS434 - GRAPH DES: WEB USER EXPER II****Long Course Title**

GRAPHIC DESIGN: WEB USER EXPERIENCE II

**Course Description**

Course focuses on advanced methods of user experience and user interface design. With faculty mentoring, students learn how to develop complex designs using these methods in user experience for the purpose of advanced media usage.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS334 - GRAPH DES: WEB USER EXPER I (3)

**ARS435 - GRAPHIC DESIGN: TYPOGRAPHY II****Long Course Title**

GRAPHIC DESIGN: TYPOGRAPHY II

**Course Description**

Course explores professional methods in type design and type application. Course teaches students how to develop advertising series and text design using illustrative approaches to hand lettering. Curriculum includes expressive methods in developing type for the purpose of environmental graphics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS335 - GRAPHIC DESIGN: TYPOGRAPHY I (3)

**ARS440 - SCULP: FABRICATION II****Long Course Title**

SCULPTURE: FABRICATION II

**Course Description**

Course continues investigation of fabrication processes exploring the specific nature of each area of specialization with emphasis on integrating multiple processes into singular sculptural works. Emphasis is placed on ideation, discussion, and presentation of personal artistic interests.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS340 - SCULP: FABRICATION I (3)

**ARS441 - SCULP: CARVING II****Long Course Title**

SCULPTURE: CARVING II

**Course Description**

Continued exploration of subtractive processes with a focus on specific material, process, or context. Discussion of ideation, historical/contemporary contexts, and presentation specific to personal artistic interests.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS341 - SCULP: CARVING I (3)

**ARS442 - SCULP: CASTING II****Long Course Title**

SCULPTURE: CASTING II

**Course Description**

Continued exploration of mold-making, patination, casting, and foundry processes as well as investigation of contemporary methods and materials. Students develop further technical knowledge and conceptual motivation related to casting with an emphasis on individual exploration.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS342 - SCULP: CASTING I (3)

**ARS447 - SCULP: SPACE AND PLACE II****Long Course Title**

SCULPTURE: SPACE AND PLACE II

**Course Description**

Exploration of installation and environmental art practices with an emphasis on creating work at off-campus sites. Students will engage in rigorous ideation through site research and public presentation. Students will have the opportunity to create public artworks on campus and in the City of Huntsville.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS347 - SPACE AND PLACE (3)

**ARS448 - DIGITAL FABRICATION II****Long Course Title**

DIGITAL FABRICATION II

**Course Description**

This advanced Digital Fabrication course focuses on advanced use digital processes to design and create physical artwork. Several digital software programs are further explored along with processes of digital fabrication machines (CNC milling, CNC plasma-cutting, laser-cutting, 3D printing, and digital die-cutting machines.)

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS348 - DIGITAL FABRICATION (3)

**ARS450 - PHOTO: DIGITAL II****Long Course Title**

PHOTO: DIGITAL II

**Course Description**

Advanced digital image creation and image presentation. Class is open to experimentation with analog materials to produce digital media. There is an emphasis on personal style to produce a cohesive final project. Students are required to provide their own digital camera with RAW settings.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS350 - PHOTO: DIGITAL I (3)

**ARS452 - PHOTO: DARKROOM II****Long Course Title**

PHOTO: DARKROOM II

**Course Description**

Advanced class in black and white darkroom photography. Students will explore the techniques of medium and large format photography to produce a final fine art print portfolio. Access to a 120 and/or 4x5 view camera is required (available through department if necessary).

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS352 - PHOTO: DARKROOM I (3)

**ARS453 - PHOTO; DRKRM, HIST & EXPER II****Long Course Title**

PHOTO: DARKROOM HISTORIC & EXPERIMENTAL II

**Course Description**

Advanced alternative and historical techniques in photography with an emphasis on personal style. Individual projects will be assigned to produce a cohesive portfolio.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS353 - PHOTO; DRKRM, HIST & EXPER I (3)

**ARS455 - PHOTO: DOCUMENTARY II****Long Course Title**

PHOTO: DOCUMENTARY II

**Course Description**

Advanced study of the documentary genre of photography throughout the history of the medium from the first portraits and travel photographs to the photojournalism and ethical issues of the modern world. Students are required to present a final portfolio of photographs.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS355 - PHOTO: DOCUMENTARY I (3)

**ARS460 - DRAWING: CONCEPTUAL****Long Course Title**

DRAWING: CONCEPTUAL

**Course Description**

Practice and theory focusing on drawing as a major medium, utilizing both traditional and contemporary methods and materials. Assignments are concept based. Nude models may be used.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS260 - DRAWING II (3)

**ARS475 - PAINTING: FIGURE II****Course Description**

Continued exploration of figurative painting processes with an emphasis on portfolio development and professional practices. Students are guided in the development of artistic facility and personal expression using paint as a medium.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS375 - PAINTING: FIGURE I (3)

**ARS476 - PAINTING: CONTEMPORARY II****Long Course Title**

PAINTING: CONTEMPORARY II

**Course Description**

Continued exploration of contemporary painting approaches with an emphasis on portfolio development and professional practices. Students are guided in their development of artistic facility and a vocabulary of visual symbols for personal expression.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS376 - PAINTING: CONTEMPORARY I (3)

**ARS477 - PAINTING: MIXED MEDIA II****Long Course Title**

PAINTING: MIXED MEDIA II

**Course Description**

Continued exploration of mixed and non-traditional media with an emphasis on portfolio development and professional practices. Students are guided in the development of artistic facility and a vocabulary of visual symbols for personal expression through the use of a variety of media.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS377 - PAINTING: MIXED MEDIA I (3)

**ARS481 - PRINT: ETCHING & RELIEF II****Long Course Title**

PRINT: ETCHING & RELIEF II

**Course Description**

This is an advanced course, where etching and relief are used to make an independent body of work. Students demonstrate how printmaking is a tool for conceptual exploration and expression. Through visual and written research students consider the hand-printed image within our culture.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS381 - PRINT: ETCHING & RELIEF I (3)

**ARS483 - PRINT: SCREENPRINT II****Long Course Title**

PRINT: SCREENPRINT II

**Course Description**

Studio practices in advanced screenprint methods are used to create an independent body of work. Students investigate how screenprinting is a tool for developing prints in an expanded way and explore the medium through the concerns of analog and digital possibilities.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS383 - PRINT: SCREENPRINT I (3)

**ARS485 - PRINT: BOOK ARTS II****Long Course Title**

PRINT: BOOK ARTS II

**Course Description**

Students develop an advanced body of work in the book arts, by exploring structure and content. Content is developed through the student's independent investigation of text and image. Structure developed through the making of mockups. Honing technical skills in printing and binding is emphasized.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS385 - PRINT: BOOK ARTS I (3)

**ARS487 - PRINT: MONOPRINT & LITHOGRAPHY II****Long Course Title**

PRINT: MONOPRINT & LITHOGRAPHY II

**Course Description**

Monoprint and lithography print processes are used to create an independent body of work in this advanced course. Students demonstrate how unique and multiple prints are tools for conceptual exploration and expression. Through research students consider the roll printed image within visual culture.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS387 - PRINT: MONOPRINT & LITHOGRAPHY I (3)



**ARS490 - PORTFOLIO DEVELOPMENT II****Long Course Title**

PORTFOLIO DEVELOPMENT II

**Course Description**

This advanced portfolio development course allows students to work with and gain feedback from studio professors and students from different studio disciplines. Students will create a fully developed body of work that is aesthetically and/or conceptually linked.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ARS390 - PORTFOLIO DEVELOPMENT I (3)

**ARS492 - ART INTERNSHIP****Long Course Title**

ART INTERNSHIP

**Course Description**

Student applies principles, theories, and skills learned in Art Studio and/or Art History courses to on-the-job experience in a professional environment. Internship host may be suggested by the student or assigned by advisor. One hundred fifty work hours required to complete 15-week internship.

**Credits**

3

**Restrictions**

Must have class standing of Junior or Senior

Instructor permission required

**ARS494 - PROFESSIONAL PRACTICES****Long Course Title**

PROFESSIONAL PRACTICES

**Course Description**

Course is a requirement for students in the BFA program, and is open to BA students. Includes preparation for the senior exit show or design portfolio, developing written materials for careers in the visual arts, and learning how to install and manage an art exhibition.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS140 - 3D DESIGN (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - ARS260 - DRAWING II (3)
  - 12 hours from any ARS 300 - 499 level course(s)

**ARS495 - INDEPENDENT PROJECTS****Long Course Title**

INDEPENDENT PROJECTS

**Course Description**

Available for an advanced major when an appropriate course is not offered to facilitate progress to graduation. May be taken only one time.

**Credits**

3

**Restrictions**

Instructor permission required

**ARS496 - PRINCIPLES FOR TEACHING ART****Long Course Title**

PRINCIPLES FOR TEACHING ART

**Course Description**

Focuses on methods, materials and processes suitable for comprehensive art education content implementation. The course is a hands-on methods course in which students are required to design and implement art lessons to be taught to students in educational settings.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - ED410 - FOUNDATIONS EDUC EVALUAT (3)
  - Earned a minimum cumulative GPA of 2.75
  - 12 hours from any ARS 300 - 399 level course(s)

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## **Arts Humanities Social Sciences**

## **AHS250 - ARTIF INTEL HUM & SOC CONTEXTS**

### **Long Course Title**

ARTIFICIAL INTELLIGENCE IN HUMAN AND SOCIAL CONTEXTS

### **Course Description**

This foundation level course introduces you to the basics of artificial intelligence (AI) and pressing societal issues concerning the use of AI. We will consider how the humanities and social science can provide unique approaches toward addressing those social issues. You will explore the use of AI from the perspective of the humanities, the social sciences, and the visual and performing arts.

### **Credits**

3

### **Restrictions**

None

### **Charger Foundations**

This course could serve as an elective in Area V for CAHS programs.

## **AHS300 - CAREER PREPARATION & PLANNING**

### **Long Course Title**

CAREER PREPARATION & PLANNING

### **Course Description**

CAHS Career and Preparation Planning is designed to assist current students and incoming new transfer students in becoming career ready. The course will focus on the following aspects: career exploration, organizational story-building; networking and online presence, job and internship search strategies, developing resumes and cover letters, and interviewing. Course seminars will give students the chance to engage substantively with the course topics in a personalized manner, discussing strengths and skills, practicing networking and interviewing.

### **Credits**

1

### **Restrictions**

College of Arts, Humanities, and Social Sciences students only

Must have a class standing of Sophomore, Junior, or Senior

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## **Astronomy**

**AST100 - SURVEY OF ASTRONOMY****Long Course Title**

SURVEY OF ASTRONOMY

**Course Description**

One semester survey of astronomy from visible phenomena in the sky to the latest astronomical discoveries. Topics include properties of solar system bodies, origin of the solar system, life cycles of stars and galaxies, exoplanets, cosmology, and life in the universe. Includes laboratory. May not be taken in combination with AST 106 or AST 107.

**Credits**

4

**Corequisites**

- Concurrently enrolled in:
  - AST100L - SURVEY OF ASTRONOMY LAB

**Charger Foundations**

Area III: Natural (Lab) Science

**AST100L - SURVEY OF ASTRONOMY LAB****Long Course Title**

SURVEY OF ASTRONOMY LAB

**Course Description**

Laboratory instruction in support of material covered in AST 100.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - AST100 - SURVEY OF ASTRONOMY (4)

**AST106 - EXPLORING THE COSMOS I****Long Course Title**

EXPLORING THE COSMOS I

**Course Description**

Introduces astronomy emphasizing quantitative aspects of physical phenomena in the universe. Topics Include motions of celestial bodies, development of astronomy, gravity and motion, light and telescopes, properties of gases and radiation, earth and moon, eclipses, and survey of the solar system. Laboratory included.

**Credits**

4

**Corequisites**

- Concurrently enrolled in:
  - AST106L - EXPLORING THE COSMOS I LAB

**Charger Foundations**

Area III: Natural (Lab) Science

**AST106L - EXPLORING THE COSMOS I LAB****Long Course Title**

EXPLORING THE COSMOS I LAB

**Course Description**

Laboratory instruction in support of material covered in AST 106.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - AST106 - EXPLORING THE COSMOS I (4)

**AST107 - EXPLORING THE COSMOS II****Long Course Title**

EXPLORING THE COSMOS II

**Course Description**

Continuation of AST 106. The sun, stars and stellar evolution, white dwarfs, neutron stars, black holes, binary stars, the Milky Way galaxy, galaxies, quasars and other active galaxies, cosmology, life in the universe. Laboratory included. Offered Spring.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AST106 - EXPLORING THE COSMOS I (4)

**Corequisites**

- Concurrently enrolled in:
  - AST107L - EXPLORING THE COSMOS II LAB

**Charger Foundations**

Area III: Natural (Lab) Science

**AST107L - EXPLORING THE COSMOS II LAB****Long Course Title**

EXPLORING THE COSMOS II LAB

**Course Description**

Laboratory instruction in support of material covered in AST 107.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - AST107 - EXPLORING THE COSMOS II (4)

## **AST109 - INTRODUCTION TO SPACE SCIENCE**

### **Long Course Title**

INTRODUCTION TO SPACE SCIENCE

### **Course Description**

This course is designed to offer an immersive experience in science, technology, engineering, and mathematics, while exploring college and career opportunities in the STEM fields. History of spaceflight, current and future space flight, engineering design challenges, astronaut training exercises are included. Laboratory experiments and simulated missions. Offered in cooperation with the U.S. Space & Rocket Center. Prerequisite: Available only to high school students with U.S. citizenship enrolled in Advanced Space Academy®.

### **Credits**

1

### **Restrictions**

Restricted to only those students enrolled in the US Space and Rocket Center program

## **AST210 - INTRO TO ASTROBIOLOGY**

### **Long Course Title**

INTRO TO ASTROBIOLOGY

### **Course Description**

Studies the origin and search for life in the universe, including topics in astronomy, physics, biology, chemistry, and atmospheric science. Introduces research in astrobiology; known requirements for life, the origin and evolution of life of Earth, and the search for extraterrestrial life.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - CH121 - GENERAL CHEMISTRY I (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)

**AST371 - INTRO TO ASTROPHYSICS****Long Course Title**

INTRO TO ASTROPHYSICS

**Course Description**

Gravitation: two-body problem, binary stars. Radiation theory. Spectral classification, Hertzsprung-Russell diagram, and introduction to stellar structure and evolution. Large-scale structure, and the evolution of the universe. Offered Spring.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)

**AST471 - ASTROPHYSICS****Long Course Title**

ASTROPHYSICS

**Course Description**

Structure and physical processes of stars from the interior to the atmosphere: energy production and transfer, atmospheric properties, and observed spectral features. Models for stellar structure. Star formation and evolution, including the effects of a companion. Offered Fall.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AST371 - INTRO TO ASTROPHYSICS (3)
  - PH351 - INTRODUCTION TO MODERN PHYSICS (3)

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## Atmospheric & Earth Science

**AES101 - EXPLORING SPACE SC & ENGR****Long Course Title**

EXPLORING SPACE SCIENCE AND ENGINEERING

**Course Description**

Exploring Space Science and Engineering courses 1-9. Each course examines an aspect of space exploration including but not limited to space science, human factors, medicine, and engineering. Each course focuses on a single aspect. No more than three of the courses in the ESS 101 / AES 101 group may be taken for credit. The courses are offered through distance learning.

**Credits**

1

**AES103 - ENVIRONMENTAL EARTH SCIENCE****Long Course Title**

ENVIRONMENTAL EARTH SCIENCE

**Course Description**

Principles and foundations of Earth and environmental science with lectures and labs on concepts in Earth system science. Applied science labs use applications and real-world examples from ecosystems, geology, soil science, water, pollution, agriculture, population, natural disasters, and energy.

**Credits**

4

**Corequisites**

- Concurrently enrolled in:
  - AES103L - LABORATORY

**AES103L - LABORATORY****Long Course Title**

LABORATORY

**Course Description**

Laboratory instruction in support of material covered in AES 103.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)



**AES104 - WEATHER & CLIMATE CHANGE****Long Course Title**

WEATHER & CLIMATE CHANGE

**Course Description**

An introduction to the atmosphere and climate system, including weather systems, climate extremes, and natural/human-induced changes in the atmosphere-climate systems. Major topics discussed include greenhouse effect, solar impacts on climate, El-Nino, climate change, atmospheric and ocean circulations, cyclones, hurricanes, thunderstorms, and tornadoes.

**Credits**

4

**Corequisites**

- Concurrently enrolled in:
  - AES104L - LABORATORY

**AES104L - LABORATORY****Long Course Title**

LABORATORY

**Course Description**

Laboratory instruction in support of material covered in AES 104.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - AES104 - WEATHER & CLIMATE CHANGE (4)

**AES105 - WORLD REGIONAL GEOGRAPHY****Long Course Title**

WORLD REGIONAL GEOGRAPHY

**Course Description**

This course introduces the study of not only the location of places, but more importantly the physical and cultural features, economies, and population of the world's geographic regions. By exploring the interactions between people and their environment.

**Credits**

3

**Charger Foundations**

Area IV: Social & Behavioral Sciences

## **AES110 - PRINCIPLES OF HUMAN GEOGRAPHY**

### **Long Course Title**

PRINCIPLES OF HUMAN GEOGRAPHY

### **Course Description**

This course serves as an introduction to geography as the science of location, through an emphasis on spatial patterns of human activities. The location of economic activities, location of cities as market and production centers, movement networks, and images and perceptions of landscapes form the core of the course.

### **Credits**

3

### **Charger Foundations**

Area IV: Social & Behavioral Sciences

## **AES209 - DATA ANALYSIS TOOLS**

### **Long Course Title**

DATA ANALYSIS TOOLS LABORATORY

### **Course Description**

Introduction to methods and techniques in data analysis for atmospheric and Earth system sciences. Using case studies and experts from multiple disciplines, students are exposed to GIS, scientific programming principles, satellite image processing, radar data and meteorological software. Course is lab-based, focused on computer software.

### **Credits**

2

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)

## **AES210 - COLLAPSE OF CIVILIZATIONS**

### **Long Course Title**

COLLAPSE OF CIVILIZATIONS

### **Course Description**

This course will investigate why some cultures succeed and others fail. From archeological and historical records of past civilizations we will examine the factors which lead to collapse in an attempt to determine the future of current societies.

### **Credits**

3

### **Equivalent Course(s)**

ARH306 - COLLAPSE OF CIVILIZATIONS

**AES212 - SEVERE WEATHER ANALYSIS****Long Course Title**

SEVERE WEATHER ANALYSIS

**Course Description**

Meteorological analysis and beginning forecasting of weather systems, severe weather, snowstorms, hurricanes, and tornadoes through the interpretation of surface, upper air, satellite, and radar weather observations. Strong emphasis placed on unique observations of severe weather from UAH radar and profiling systems.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES104 - WEATHER & CLIMATE CHANGE (4)

**Corequisites**

- Concurrently enrolled in:
  - AES212L - LABORATORY

**AES212L - LABORATORY****Long Course Title**

LABORATORY

**Course Description**

Laboratory instruction in support of material covered in ESS 212 / AES 212..

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - AES212 - SEVERE WEATHER ANALYSIS (4)

**AES301 - INTRO TO EARTH & ATMOSPHERIC PHYSICS****Long Course Title**

INTRO TO EARTH & ATMOSPHERIC PHYSICS

**Course Description**

This course will provide a survey of earth and atmospheric science for undergraduate students. Topics that will be covered will focus on how the earth-atmosphere system works in an integrated fashion.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH101 - GENERAL PHYSICS I (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)

**AES302 - PEOPLE, PLANTS, & ENVIRONMENT****Long Course Title**

PEOPLE, PLANTS, & ENVIRONMENT

**Course Description**

This course is designed to introduce students from multiple departments to the vital roles that plants have in our ecosystems through the study of basic plant and soil science. Special attention is placed on the impact plants have on our technology-based society. Sophomore standing or above.

**Credits**

3

**Prerequisites**

- Must not have a class standing of Freshman

## **AES303 - CLASSI & PHYSICAL CAUSES CLIM**

### **Long Course Title**

CLASSIFICATION & PHYSICAL CAUSES OF CLIMATE

### **Course Description**

Basic atmospheric structure and physical processes, surface processes, climate history and climate change, land use and land change, microclimates, topoclimates, Ecoclimatology.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH101 - GENERAL PHYSICS I (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)

## **AES305 - HYDROLOGY**

### **Long Course Title**

HYDROLOGY

### **Course Description**

Introduction to hydrologic cycles and concepts of how water interacts with the environment. Covers water properties, precipitation, groundwater and runoff, currents, waves, sediment processes, and conservation strategies.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH101 - GENERAL PHYSICS I (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)

**AES307 - ENVIRONMENTAL ARCHEOLOGY****Long Course Title**

ENVIRONMENTAL ARCHEOLOGY

**Course Description**

Archeologists today need a wide range of scientific approaches in order to delineate and interpret the ecology of their sites. This approach is revolutionizing archeology making it relevant to the modern-day world. Climate modeling, remote sensing, and GIS are investigated in this course.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C in all of the following:
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)

**AES312 - PRINCIPLES OF ECOLOGY****Long Course Title**

PRINCIPLES OF ECOLOGY

**Course Description**

Lecture/Lab. One lab a week. Population structure and growth, competition, predation, symbiosis, biogeochemical cycling and energy flow, disturbance and community dynamics, biodiversity and conservation. Field trips required. Strongly recommend CH 101 or CH 121.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS120 - ORGANISMAL BIOLOGY (3)

**Equivalent Course(s)**

BYS312 - PRINCIPLES OF ECOLOGY

## **AES313 - GEOGRAPHIC INFORMATION SYSTEMS**

### **Long Course Title**

GEOGRAPHIC INFORMATION SYSTEMS

### **Course Description**

Introduction to scientific spatial analysis concepts and spatial data processing with focus on ESRI ArcGIS software. Basic concepts in GIS data management and creation, with topics including raster and vector data, projections, data query, data acquisition, and cartography.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)

## **AES321 - POLLUTION PROBLEMS**

### **Long Course Title**

POLLUTION PROBLEMS

### **Course Description**

Quantitative study of environmental conditions, processes, and problem-solving techniques related to specific pollution problems in air, water, and land.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH121 - GENERAL CHEMISTRY I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH101 - GENERAL PHYSICS I (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)

## **AES341 - THERMODYNAMIC METEOROLOGY**

### **Long Course Title**

THERMODYNAMIC METEOROLOGY

### **Course Description**

Introduction to atmospheric thermodynamics with an emphasis on applications in meteorology, including the equation of state, Zeroth, First and Second Laws of Thermodynamics, adiabatic processes, moist processes, static stability, stability of moist air, and severe weather applications.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES209 - DATA ANALYSIS TOOLS (2)
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)

## **AES351 - DYNAMIC METEOROLOGY**

### **Long Course Title**

DYNAMIC METEOROLOGY

### **Course Description**

Dynamics and kinematics of atmospheric flow. Meteorological coordinate systems. Fundamental governing equations of atmospheric motion, circulation, and vorticity.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)



## **AES352 - SYNOPTIC METEOROLOGY**

### **Long Course Title**

SYNOPTIC METEOROLOGY

### **Course Description**

Analysis, interpretation, and forecasting synoptic-scale and mesoscale phenomena, including air masses, frontal systems, cyclones, anti-cyclones, tropical cyclones, and associated mesoscale phenomena. Emphasis is placed on the use of remote sensing data from satellites, radars, and profilers using state-of-the-art workstations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES212 - SEVERE WEATHER ANALYSIS (4)
  - AES341 - THERMODYNAMIC METEOROLOGY (3)
  - AES351 - DYNAMIC METEOROLOGY (3)

## **AES370 - INTRODUCTION TO REMOTE SENSING**

### **Long Course Title**

INTRODUCTION TO REMOTE SENSING

### **Course Description**

This course introduces the fundamental physics of remote sensing systems and incorporates hands-on exercises of image processing, information extraction and interpretation, and basic applications of airborne and satellite data in Earth System Science and Atmospheric Science.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH101 - GENERAL PHYSICS I (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - AES209 - DATA ANALYSIS TOOLS (2)

**AES402 - SCI & SOC ASPTS NATRL DISASTER****Long Course Title**

SCIENTIFIC & SOCIETAL ASPECTS OF NATURAL DISASTERS

**Course Description**

Students will understand causes of major natural events and evaluate effects of disasters on populations and possible mitigation measures. GIS software will be used to show progression of events and/or their impacts using course case studies.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES104 - WEATHER & CLIMATE CHANGE (4)

**Cross-Listed Course**

AES502 - SCI & SOC ASPTS NATRL DISASTER

**AES407 - ENV THRTS, PUB POLY, & DEC MKG****Long Course Title**

ENVIRONMENTAL THREATS, PUBLIC POLICY, & DECISION MAKING

**Course Description**

Researchers, policymakers, and environmental campaigners have identified twenty-five potential future threats to the global environment. This course examines the nature and consequences of these threats and their potential impacts for the survival of the human race.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)

**Cross-Listed Course**

AES507 - ENVRNMTL THRTS PBL PY DEC MKG

## **AES408 - PYTHON FOR GIS**

### **Long Course Title**

PYTHON FOR GIS

### **Course Description**

Introduction to GIS model building, Python programming, and automation of scripts for ArcGIS. Techniques in Model Builder, Python, and the methods for automation will be taught using data from numerous available data sources across the internet with heavy emphasis on the Earth Sciences.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)

### **Cross-Listed Course**

AES508 - PYTHON FOR ID ESS APPLICATIONS

## **AES409 - SCI PROGRAMNG FOR EARTH & ATMOS**

### **Long Course Title**

SCIENTIFIC PROGRAMMING FOR EARTH & ATMOSPHERIC SCIENTISTS

### **Course Description**

Survey of data types and languages commonly used in the meteorological community along with practical applications to meteorology. Course is designed to prepare students for graduate work and research in atmospheric science.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
    - MA172 - CALCULUS II (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)

### **Cross-Listed Course**

AES509 - SCI PROGRAMNG FOR EARTH & ATMOS

**AES410 - OPERATIONAL WEATHER FORECAST'G****Long Course Title**

OPERATIONAL WEATHER FORECASTING

**Course Description**

Subjective and objective methods of atmospheric prognosis. Techniques for forecasting critical weather elements. Interpretation, use and systematic errors of computer-generated products, human factors with forecasting, and application of meteorological theory in an operational setting.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES341 - THERMODYNAMIC METEOROLOGY (3)
  - AES351 - DYNAMIC METEOROLOGY (3)
  - AES352 - SYNOPTIC METEOROLOGY (3)

**Cross-Listed Course**

AES510 - OPERATIONAL WEATHER FORECAST'G

**AES414 - GEOSPATIAL APPLICATIONS****Long Course Title**

GEOSPATIAL APPLICATIONS

**Course Description**

An introductory look at the ways in which GIS can be put to use in different fields of study, drawing examples from Demography, Sociology, Archaeology, History, and Ecology. Focus on cartography and map creation principles and public geospatial data acquisition.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)

**Cross-Listed Course**

AES514 - GEOSPATIAL APPLICATIONS

**AES415 - ADVANCED TOPICS IN GIS****Long Course Title**

ADVANCED TOPICS IN GIS

**Course Description**

Advanced continuation of concepts applied in Geospatial Applications. Students will learn through modules of real world scientific research how to use further tools in ArcGIS including: 3D Analyst, Spatial Analyst, Network Analyst. Topics include web data dissemination, spatiotemporal analysis and some basic spatial statistics measures.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES414 - GEOSPATIAL APPLICATIONS (3)

**Cross-Listed Course**

AES515 - ADVANCED TOPICS IN GIS

**AES420 - INTRO ATMOSP CHEM & AIR POLLU****Long Course Title**

INTRODUCTION TO ATMOSPHERIC CHEMISTRY & AIR POLLUTION

**Course Description**

This self-contained introductory course in atmospheric chemistry and air pollution is designed to provide students the basics of atmospheric chemistry and air pollution concepts. Topics include air pollutants, air-pollution meteorology, atmospheric gases and aerosols, and atmospheric processes.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
  - AES321 - POLLUTION PROBLEMS (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)

**Cross-Listed Course**

AES520 - INTRO ATMOSP CHEM & AIR POLLU

**AES441 - ATMOSP THERMODY & CLOUD PHYSIC**  
**Long Course Title**

ATMOSPHERIC THERMODYNAMICS & CLOUD PHYSICS

**Course Description**

General aspects of thermodynamics and cloud physical processes occurring within the atmosphere; atmospheric statics and stability, saturation point analysis, aerosols, nucleation, and the behavior/growth of cloud particles and hydrometeors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES341 - THERMODYNAMIC METEOROLOGY (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

**Cross-Listed Course**

AES541 - ATM THERMODYN & CLOUD PHYSICS

**AES451 - ATMOSPHERIC FLUID DYNAMICS I**  
**Long Course Title**

ATMOSPHERIC FLUID DYNAMICS I

**Course Description**

Fluid dynamics in the atmosphere. Coriolis acceleration, scale analysis and appropriate approximations of the complete governing equations. Numerical analysis and interpretation of weather phenomena.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES351 - DYNAMIC METEOROLOGY (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

**Cross-Listed Course**

AES551 - ATMOS FLUID DYNAMICS I

**AES454 - FORECASTING MESOSCALE PROC****Long Course Title**

FORECASTING MESOSCALE PROCESSES

**Course Description**

Detection and forecasting of atmospheric mesoscale phenomena including the structure and evolution of clouds, precipitation (including floods), thunderstorms, and severe weather. Includes basics of instruments used to detect mesoscale phenomena, most notably satellite and radar.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES352 - SYNOPTIC METEOROLOGY (3)

**Cross-Listed Course**

AES554 - FORECASTING MESOSCALE PROC

**AES461 - ATMOSPHERIC RADIATION I****Long Course Title**

ATMOSPHERIC RADIATION I

**Course Description**

Fundamentals of terrestrial atmospheric radiation. Topics include: basic concepts, radiative transfer equation, gaseous absorption, scattering by molecules and particles, band models, transmittance along an inhomogeneous path.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

**Cross-Listed Course**

AES561 - ATMOSPHERIC RADIATION I

## **AES471 - RADAR METEOROLOGY**

### **Long Course Title**

RADAR METEOROLOGY

### **Course Description**

Introduction to principles of radar meteorology, including radar operations, hardware, interpretation and analysis. Doppler, dual-polarization and dual-wavelength radar theory, methods and applications are covered.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES341 - THERMODYNAMIC METEOROLOGY (3)
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCI PROGRAMMING FOR EARTH & ATMOS (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCI PROGRAMMING FOR EARTH & ATMOS (3)

### **Cross-Listed Course**

AES571 - INTRO TO RADAR METEOROLOGY

## **AES472 - SATELLITE METEOROLOGY**

### **Long Course Title**

SATELLITE METEOROLOGY

### **Course Description**

The goal for this course is to provide students in undergraduate and graduate-level Earth and Atmospheric Science a background in satellite meteorology. During all components of the course there will be a heavy emphasis on practical meteorological satellite interpretation with respect to land surface and especially atmospheric features.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCI PROGRAMMING FOR EARTH & ATMOS (3)

### **Cross-Listed Course**

AES572 - SATELLITE METEOROLOGY



**AES490 - SPEC TOPICS EARTH & ATMOSPH SC****Long Course Title**

SPECIAL TOPICS IN EARTH & ATMOSPHERIC SCIENCE

**Course Description**

Special offerings to students in areas of interest not covered in the present curriculum.

**Credits**

1 - 3

**Prerequisites**

- Instructor Permission Required

**Cross-Listed Course**

AES590 - SPECIAL TOPICS IN AES

**AES495 - DIRECTED STUDY****Long Course Title**

DIRECTED STUDY

**Course Description**

Supervised special study topics for undergraduates; often is offered to undergraduates who have senior standing. Individual students identify and obtain consent from a faculty mentor.

**Credits**

2 - 4

**Prerequisites**

- Instructor Permission Required

**AES497 - UNDERGRADUATE INTERNSHIP****Long Course Title**

ATMOSPHERIC AND EARTH SCIENCE INTERNSHIP

**Course Description**

Individual internships in fields directly related to atmospheric or Earth system science. Student must show acceptance into a formal internship program, and the course requires approval by department chair and consent by the internship supervisor.

**Credits**

3

**Prerequisites**

- Department Chair Approval Required

**AES498 - RESEARCH & PROF DEV CAPSTONE****Long Course Title**

RESEARCH & PROFESSIONAL DEVELOPMENT CAPSTONE

**Course Description**

Applied concepts for professional and research development. Includes evaluation and discussion of published literature and department seminars, with focus on research synthesis and critique. Also includes development of professional and career skills focused on the Earth and Atmospheric Sciences. Junior or senior standing required.

**Credits**

1

**Prerequisites**

- Complete 1 of the following
  - Must have a class standing of Junior
  - Must have a class standing of Senior

**AES499 - UNDERGRADUATE RESEARCH****Long Course Title**

UNDERGRADUATE RESEARCH

**Course Description**

For advanced earth system science students. Individual investigations into earth systems science problems under direct supervision of a research mentor. Research is conducted and thesis-style paper is written and orally presented. Students identify and obtain consent from a faculty research mentor.

**Credits**

2 - 4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES498 - RESEARCH & PROF DEV CAPSTONE (1)

**AES501 - SURVEY ATMOSPHERIC SCIENCE****Long Course Title**

SURVEY ATMOSPHERIC SCIENCE

**Course Description**

General survey of the field of atmospheric science includes thermodynamics, atmospheric dynamics, cloud physics, and atmospheric radiation. Quantitative examination of atmospheric properties including atmospheric composition, structure and dynamics.

**Credits**

3

**AES502 - SCI & SOC ASPTS NATRL DISASTER****Long Course Title**

SCIENTIFIC & SOCIETAL ASPECTS OF NATURAL DISASTERS

**Course Description**

Examination of the physical causes of major natural geophysical hazards and their impact on the natural and built environment, society and the economy. Evaluation of the ability to forecast events, and develop sound mitigation and recovery measures. Specific case studies are considered.

**Credits**

3

**Cross-Listed Course**

AES402 - SCI & SOC ASPTS NATRL DISASTER

**AES507 - ENVRNMTL THRTS PBL PY DEC MKG****Long Course Title**

ENVIRONMENTAL THREATS, PUBLIC POLICY, & DECISION MAKING

**Course Description**

Researchers, policymakers and environmental campaigners have identified 25 potential future threats to the global environment. This course examines the nature and consequences of these threats and their potential impacts for the survival of the human race.

**Credits**

3

**Cross-Listed Course**

AES407 - ENV THRTS, PUB POLY, & DEC MKG

**AES508 - PYTHON FOR ID ESS APPLICATIONS****Long Course Title**

PYTHON FOR ID ESS APPLICATIONS

**Course Description**

Introduction to GIS model building, Python programming, and automation of scripts for ArcGIS. Techniques in Model Builder, Python, and the methods for automation will be taught using data from numerous available data sources across the internet with heavy emphasis on the Earth Sciences.

**Credits**

3

**Cross-Listed Course**

AES408 - PYTHON FOR GIS

**AES509 - SCI PROGRAMNG FOR EARTH & ATMOS****Long Course Title**

SCIENTIFIC PROGRAMMING FOR EARTH & ATMOSPHERIC SCIENTISTS

**Course Description**

Survey of data types and languages commonly used in the meteorological community along with practical application to meteorology. Course is designed to prepare students for graduate work and research in atmospheric science.

**Credits**

3

**Cross-Listed Course**

AES409 - SCI PROGRAMNG FOR EARTH & ATMOS

**AES510 - OPERATIONAL WEATHER FORECAST'G****Long Course Title**

OPERATIONAL WEATHER FORECASTING

**Course Description**

Operational Meteorology covers subjective and objective methods of atmospheric prognosis, including techniques for forecasting operationally-important weather elements. Course explores interpretation, use and systematic errors of computer-generated products, human factors within forecasting, and application of meteorological theory in an operational setting. Course instruction is accomplished through analysis of various weather events from beginning to completion.

**Credits**

3

**Cross-Listed Course**

AES410 - OPERATIONAL WEATHER FORECAST'G

**AES514 - GEOSPATIAL APPLICATIONS****Long Course Title**

GEOSPATIAL APPLICATIONS

**Course Description**

An introductory look at the ways in which GIS can be put to use in different fields of study, drawing examples from Demography, Sociology, Archaeology, History and Ecology. Focus on cartography and map creation principles and public geospatial data acquisition.

**Credits**

3

**Cross-Listed Course**

AES414 - GEOSPATIAL APPLICATIONS

**AES515 - ADVANCED TOPICS IN GIS****Long Course Title**

ADVANCED TOPICS IN GIS

**Course Description**

Advanced special topics: visualization of GIS and remote sensing data, landscape characterization (pattern vs. process), multitemporal analysis, aggregation of data types, developing an integrated GIS environment for performing complex space-time modeling analyses, and land-atmosphere interactions. Same as AES 415.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES514 - GEOSPATIAL APPLICATIONS (3)

**Cross-Listed Course**

AES415 - ADVANCED TOPICS IN GIS

**AES520 - INTRO ATMOSP CHEM & AIR POLLU****Long Course Title**

INTRODUCTION TO ATMOSPHERIC CHEMISTRY & AIR POLLUTION

**Course Description**

An introduction designed to provide students with the basics of atmospheric chemistry and air pollution concepts. Topics include air pollutants, air-pollution meteorology, atmospheric gases and aerosols, and atmospheric processes.

**Credits**

3

**Cross-Listed Course**

AES420 - INTRO ATMOSP CHEM & AIR POLLU

**AES541 - ATM THERMODYN & CLOUD PHYSICS****Long Course Title**

ATMOSPHERIC THERMODYNAMICS & CLOUD PHYSICS

**Course Description**

Thermodynamic & cloud physical processes in the atmosphere. Atmospheric statics & stability. Role of aerosols in nucleation of cloud and ice particles. Physical processes that produce the growth of hydrometeors in cold and warm clouds. Applicable measurement techniques.

**Credits**

3

**Cross-Listed Course**

AES441 - ATMOSP THERMODY & CLOUD PHYSIC

**AES551 - ATMOS FLUID DYNAMICS I****Long Course Title**

ATMOSPHERIC FLUID DYNAMICS I

**Course Description**

Fluid dynamics in the atmosphere. Coriolis acceleration, scale analysis, and appropriate approximations of the complete governing equations. Numerical analysis and interpretation of weather phenomena.

**Credits**

3

**Cross-Listed Course**

AES451 - ATMOSPHERIC FLUID DYNAMICS I

**AES554 - FORECASTING MESOSCALE PROC****Long Course Title**

FORECASTING MESOSCALE PROCESSES

**Course Description**

Detection and forecasting of atmospheric mesoscale phenomena including the structure and evolution of clouds, precipitation (including floods), thunderstorms, and severe weather. Includes basics of instruments used to detect mesoscale phenomena, most notably satellite and radar.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES551 - ATMOS FLUID DYNAMICS I (3)

**Cross-Listed Course**

AES454 - FORECASTING MESOSCALE PROC

**AES561 - ATMOSPHERIC RADIATION I****Long Course Title**

ATMOSPHERIC RADIATION I

**Course Description**

Fundamentals of terrestrial atmospheric radiation. Topics include basic concepts, radiative transfer equation, gaseous absorption, scattering by molecules and particles, band models, and transmittance along an inhomogeneous path.

**Credits**

3

**Cross-Listed Course**

AES461 - ATMOSPHERIC RADIATION I

## **AES571 - INTRO TO RADAR METEOROLOGY**

### **Long Course Title**

INTRODUCTION TO RADAR METEOROLOGY

### **Course Description**

Introduction to principles of radar meteorology, including radar operations, hardware, interpretation, and analysis. Topics covered include doppler, dual-polarization and dual-wavelength radar theory, methods, and applications.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)

### **Cross-Listed Course**

AES471 - RADAR METEOROLOGY

## **AES572 - SATELLITE METEOROLOGY**

### **Long Course Title**

SATELLITE METEOROLOGY

### **Course Description**

The goal for this course is to provide students in undergraduate and graduate level Earth and Atmospheric Science a background in satellite meteorology. During all components of the course there will be a heavy emphasis on practical meteorological satellite interpretation with respect to land surface and especially atmospheric features.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - AES508 - PYTHON FOR ID ESS APPLICATIONS (3)
  - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)

### **Cross-Listed Course**

AES472 - SATELLITE METEOROLOGY

## **AES590 - SPECIAL TOPICS IN AES**

### **Long Course Title**

SPECIAL TOPICS IN AES

### **Course Description**

Selected topics of interest not included under other courses.

### **Credits**

1 - 3

### **Cross-Listed Course**

AES490 - SPEC TOPICS EARTH & ATMOSPH SC

## **AES603 - CLIMATE DYNAMICS**

### **Long Course Title**

CLIMATE DYNAMICS

### **Course Description**

Origin and evolution of the climate system including underlying causes for past climates such as occurred during the ice ages. Statistical processing of various time series to extract climactic signals in the data. Determination of global-scale forcing mechanisms, which impact climate.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

## **AES606 - DATA ANALY ATMOSPHERIC SCNTS**

### **Long Course Title**

DATA ANALYSIS ATMOSPHERIC SCIENTISTS

### **Course Description**

A theoretical and practical introduction to various data analysis methods commonly used in atmospheric science. Topics include forecasting techniques to generate models to fit data, model assessment using parametric tests, probability theory, and Monte Carlo methods to solve a variety of problems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)

## **AES610 - LAND USE APP & SUSTAINABILITY**

### **Long Course Title**

LAND USE APPLICATIONS & SUSTAINABILITY

### **Course Description**

Study of land use and sustainability issues using satellite image processing and GIS. International examples of urbanization, agriculture, transportation, water management, and natural resources exploitation. Discussions of current literature and quantitative analyses of satellite and situ data.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - AES515 - ADVANCED TOPICS IN GIS (3)
  - Instructor Permission



**AES612 - ADV GIS EARTH ATMOSPHERE PROBL****Long Course Title**

ADVANCED GIS FOR EARTH AND ATMOSPHERE PROBLEMS

**Course Description**

Advanced GIS and remote sensing/image processing. Discussion, guided readings, and group labs to interact with student peers and instructor to develop geospatial solutions to problems relevant to their thesis research including appropriate research design, data collection, and analysis.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES515 - ADVANCED TOPICS IN GIS (3)
  - AES610 - LAND USE APP & SUSTAINABILITY (3)

**AES620 - ATMOSPHERIC CHEMISTRY & AEROSI****Long Course Title**

ATMOSPHERIC CHEMISTRY & AEROSOLS

**Course Description**

Primary processes, thermodynamics, photochemistry, kinetics, models, and measurements applied to troposphere and stratosphere; natural and anthropogenic; chlorine, nitrogen, hydrogen, and oxygen catalytic cycles; ground- and satellite-based observations of trace species.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES520 - INTRO ATMOSP CHEM & AIR POLLU (3)

**AES622 - AIR POLLUTION MODELING****Long Course Title**

AIR POLLUTION MODELING

**Course Description**

Air pollution Lagrangian and Eulerian modeling concepts and methods from micro to synoptic scales; plume, large eddy simulations and urban-regional models in research and regulatory applications; transport, dispersion, chemistry, clouds, aerosols, and wet/dry deposition.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES520 - INTRO ATMOSP CHEM & AIR POLLU (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

## **AES624 - AEROSIS AND CLOUDS**

### **Long Course Title**

AEROSIS AND CLOUDS

### **Course Description**

Principles of atmospheric aerosols and clouds, including chemistry, physics, dynamics and their roles on climate and air quality.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES520 - INTRO ATMOSP CHEM & AIR POLLU (3)

## **AES625 - AIR POLL APP & DEC MAKG REMOTE**

### **Long Course Title**

AIR POLLUTION APPLICATIONS & DECISION MAKING

### **Course Description**

Course will review principles of air pollution, measurement methods, regulation, national and international standards and how research is used to make decisions regarding air quality. The course will use ground-based, satellite, and numerical modeling information through a case study approach.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES501 - SURVEY ATMOSPHERIC SCIENCE (3)

## **AES630 - PHYSICAL CLIMATOLOGY**

### **Long Course Title**

PHYSICAL CLIMATOLOGY

### **Course Description**

This course examines the physical aspects of the global climate system, including the global energy balance, surface energy balance, hydrologic cycle, climate classification, and ocean circulation, natural and anthropogenic climate change and other selected topics such as climate sensitivity.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - AES501 - SURVEY ATMOSPHERIC SCIENCE (3)
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)

**AES632 - ENERGY, CLIMATE, ENVIRONMENT****Long Course Title**

ENERGY, CLIMATE, ENVIRONMENT

**Course Description**

This course focuses on energy and its impact on the environment including climate change and air pollution. Specific energy forms, such as fossil fuels, nuclear energy, and solar energy, are discussed.

**Credits**

3

**AES635 - GENERAL CIRCULATION****Long Course Title**

GENERAL CIRCULATION

**Course Description**

Detailed examination of the observed dynamic, thermodynamic and chemical structure of the atmosphere, including mid-latitude baroclinic systems, tropical systems, global-scale energy, mass and momentum budgets, and the fundamental climatology of the atmosphere.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

**AES642 - PRECIP PHYSICS FOR RADAR****Long Course Title**

PRECIPITATION PHYSICS FOR RADAR

**Course Description**

Cloud microphysics theory, models, in-situ and radar observations of hydrometers will be utilized together to explore advanced concepts in precipitation physics and their connection to radar meteorology, including coalescence, break-up, freezing, size sorting, aggregation, rimming, and melting.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES571 - INTRO TO RADAR METEOROLOGY (3)

**AES651 - ATMOS FLUID DYNAMICS II****Long Course Title**

ATMOSPHERIC FLUID DYNAMICS II

**Course Description**

Wave motions in the atmosphere with emphasis of Rossby, Kelvin and gravity waves. Systematic scaling of primitive equations to develop quasi-geostrophic and Ekman-layer theory. Shallow water theory, stratified flows, and barotropic and baroclinic instability.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES551 - ATMOS FLUID DYNAMICS I (3)

**AES652 - ADV SYNOPTIC METEOROLOGY****Long Course Title**

ADVANCED SYNOPTIC METEOROLOGY

**Course Description**

Analysis, interpretation, and forecasting synoptic-scale, and mesoscale phenomena, including air masses, frontal systems, cyclones, anticyclones, and waves toward understanding process dynamics. Emphasize the use of observational, satellite and numerical model data, including radars and profilers.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

**AES655 - BOUNDARY LAYER METEOROLOGY****Long Course Title**

BOUNDARY LAYER METEOROLOGY

**Course Description**

Survey of atmospheric boundary layer (ABL) properties. Review of turbulence, convective and stable boundary layers, surface forcing, boundary layer discontinuities, and singular phenomena within the ABL. Atmospheric field measurements are used to enhance understanding of ABL process.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

## **AES656 - TROPICAL METEOROLOGY**

### **Long Course Title**

TROPICAL METEOROLOGY

### **Course Description**

Overview concepts of the dynamics and climatology of the tropics and of significant tropical precipitation systems. Topics also include Kelvin waves, equatorial flows, convective scale dynamics, island meteorology, tropical cyclones, ENSO, radiative-convective equilibrium, and gregarious cloud systems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

## **AES657 - NOWCASTING THEORY METHODS**

### **Long Course Title**

NOWCASTING THEORY METHODS

### **Course Description**

Theory, methods and applications of 0-6 hour weather and ecological prediction, which is a forecast time period when numerical prediction models have low skill. Topics include predictability, data assimilation, statistical methods, and algorithms using Earth and atmospheric science observations.

### **Credits**

3

## **AES670 - SATELLITE REMOTE SENSING I**

### **Long Course Title**

SATELLITE REMOTE SENSING I

### **Course Description**

Using a hands on approach, this course covers a broad range of topics concerning digital image processing applied to the remote sensing of atmospheric, cloud and surface properties using various satellite data sets.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)

## **AES671 - GROUND BASED REMOTE SENSING**

### **Long Course Title**

GROUND BASED REMOTE SENSING

### **Course Description**

Principles and measurement capabilities of active and passive ground-based remote sensing systems: radar, wind profiler, lidar, sodar, and passive radiometer systems. Integration of remote sensing measurements to retrieve properties of atmospheric phenomena. Hands-on usage and field measurements.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)

## **AES672 - DUAL POLARIZATION RADAR MTRLGY**

### **Long Course Title**

DUAL POLARIZATION RADAR METEOROLOGY

### **Course Description**

Theory, analysis, and interpretation of dual polarization radar for meteorological applications. Course covers dual polarization radar system hardware; the basic theory underlying polarimetric radar data and methodology; analysis, interpretation and application of polarimetric radar variables; and dual meteorological and convective weather applications; specifically, precipitation measurement and hydrometeor identification. Example applications include rain rate estimation, drop size determination, hail identification, tornado detection, snow vs rain delineation, and cloud electrification studies.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES571 - INTRO TO RADAR METEOROLOGY (3)

## **AES673 - LIGHTNING**

### **Long Course Title**

LIGHTNING

### **Course Description**

An introduction to lightning. Topics include qualitative and quantitative description of lightning discharges; electrification of thunderstorms; temporal and spatial variation of lightning on multiple scales; various types of lightning; basic lightning models; current methods of measuring lightning.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)

## **AES675 - ATMOSPHERIC DATA ASSIMILATION**

### **Long Course Title**

ATMOSPHERIC DATA ASSIMILATION

### **Course Description**

Data assimilation methods and concepts including objective analysis and initialization as relevant to numerical weather prediction. Emphasis on a variation of methods, successive correction, optimal interpolation, adjoin and gradient concepts, singular vectors, Kalman filters, and nudging.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

## **AES676 - REMOTE SENSING OF ENVIRONMENT**

### **Long Course Title**

REMOTE SENSING OF ENVIRONMENT

### **Course Description**

This course pursues both basic and advanced concepts in radiative transfer processes and retrieval algorithms of land surface biophysical variables from remote sensing observations, with an emphasis on the hands-on experience of data preprocessing and information extraction by using ENVI.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES514 - GEOSPATIAL APPLICATIONS (3)

## **AES680 - NUMERICAL MOD APPL ESS**

### **Long Course Title**

NUMERICAL MODELING APPLICATIONS ESS

### **Course Description**

This course will provide the physical basis for numerical model applications in the earth-atmosphere system including spatial and temporal scales.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES501 - SURVEY ATMOSPHERIC SCIENCE (3)
  - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)

**AES681 - NUMERICAL ATMOS MODELING****Long Course Title**

NUMERICAL ATMOSPHERIC MODELING

**Course Description**

Introduction to numerical methods applied to simulation of the atmosphere. Basic numerical solution techniques, along with filtering, radiative parameterizations, thermodynamics, turbulent parameterization, initialization, and coordinate transformation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES551 - ATMOS FLUID DYNAMICS I (3)

**AES690 - SPECIAL TOPICS IN ESS****Long Course Title**

SPECIAL TOPICS IN ESS

**Course Description**

Selected topics of interest not included under other courses.

**Credits**

3

**AES698 - MASTERS CAPSTONE****Long Course Title**

MASTERS CAPSTONE

**Course Description**

An extended research project resulting in a substantive paper that involves the original collection, analysis and/or interpretation of scientific data and/or results. Conducted under the guidance of an advisor. Required for MS ESS non-thesis option.

**Credits**

3

**AES699 - MASTER'S THESIS****Course Description**

A minimum of six thesis credit hours is required for MS degree.

**Credits**

0 - 6



## **AES740 - CLOUD PROCESSES**

### **Long Course Title**

CLOUD PROCESSES

### **Course Description**

Theory and observations of the bulk microphysics and kinematic structures of clouds. Topics include: interactions among dynamical, microphysical and thermodynamic processes within cloud systems, the dynamics of organized convective systems, and remote sensing of clouds and precipitation features.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
  - AES551 - ATMOS FLUID DYNAMICS I (3)

## **AES761 - ATMOSPHERIC RADIATION II**

### **Long Course Title**

ATMOSPHERIC RADIATION II

### **Course Description**

Advanced topics in atmospheric radiative transfer. Specific topics include Maxwell equations, Mie theory, polarization and radiative transfer in a scattering atmosphere.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES561 - ATMOSPHERIC RADIATION I (3)

## **AES770 - SATELLITE REMOTE SENSING II**

### **Long Course Title**

SATELLITE REMOTE SENSING II

### **Course Description**

Using various satellite data sets and radiative transfer models, this course will train students to calculate and study cloud, aerosol, ocean and land surface properties to assess the radiative energy budget of the earth-atmosphere system.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - AES670 - SATELLITE REMOTE SENSING I (3)

**AES780 - SEMINAR****Long Course Title**

SEMINAR

**Course Description**

Speakers are invited to report on research relevant to the field of Atmospheric and Earth System Science. Students are expected to attend at least twelve seminars and to write short descriptions of the presentations.

**Credits**

1

**AES781 - STUDENT SEMINAR****Long Course Title**

STUDENT SEMINAR

**Course Description**

Guest speakers reports on research relevant to the fields of Atmospheric and Earth System Science. Students are expected to attend weekly seminars, submit a paper based on at least ten talks, and make a 15 minute conference-type presentation on a research topic in atmospheric science selected in agreement with their advisor.

**Credits**

1

**AES782 - PROFESSIONAL DEVELOPMENT****Long Course Title**

PROFESSIONAL DEVELOPMENT

**Course Description**

Topics concerning professional ethics, writing scientific journal articles, proposals and resumes, preparing budgets, networking, time management, conference presentations, research administration, funding agencies, stress, and burnout will be discussed.

**Credits**

1

**AES790 - SEL TOPICS IN ATMOS SCI****Long Course Title**

SELECTED TOPICS IN ATMOSPHERIC SCIENCE

**Course Description**

Selected topics of interest not included under other courses.

**Credits**

1 - 4

**AES799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on a doctoral dissertation.

**Credits**

0 - 9

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## Biological Sciences

**BYS100 - INTRO HEALTH PROFESSIONS****Long Course Title**

INTRODUCTION HEALTH PROFESSIONS

**Course Description**

Career options for undergraduate students interested in health professions. Basics of health-care delivery systems and terminology of health care. No BYS major or minor credit. Primarily for freshman and sophomores

**Credits**

1

**BYS109 - FUNDAMENTALS OF BIOLOGY****Long Course Title**

FUNDAMENTALS OF BIOLOGY

**Course Description**

This course emphasizes an understanding of the living world through discussion of biological concepts and how they relate to social sciences and humanities. Biological concepts covered include the nature of science, cellular biology, biochemistry, heredity, evolution, biological diversity, ecology, anatomy, and physiology. Lab included in the lecture

**Credits**

4

**BYS119 - PRINCIPLES OF BIOLOGY****Long Course Title**

PRINCIPLES OF BIOLOGY

**Course Description**

Introduction to biological principles of cell structure, function, metabolism, and reproduction.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)

**Charger Foundations**

Area III: Natural (Lab) Science

**BYS120 - ORGANISMAL BIOLOGY****Long Course Title**

ORGANISMAL BIOLOGY

**Course Description**

Discussion of biological function with special emphasis on contrasting strategies employed by organisms in meeting similar biology needs.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)

**Charger Foundations**

Area III: Natural (Lab) Science

**BYS121 - PRINCIPLES OF BIOLOGY LAB****Long Course Title**

PRINCIPLES OF BIOLOGY LABORATORY

**Course Description**

Laboratory exercised to introduce students to accurate measurement techniques, observation, and the development of relevant hypotheses. Several formal lab reports are required as an introduction to scientific writing.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - BYS119 - PRINCIPLES OF BIOLOGY (3)

**Charger Foundations**

Area III: Natural (Lab) Science

**BYS122 - ORGANISMAL BIOLOGY LAB****Long Course Title**

ORGANISMAL BIOLOGY LABORATORY

**Course Description**

Introduction to the basic concepts of natural selection, population biology, and the biodiversity of animals and plants. Several formal lab reports are required as further introduction to scientific writing, along with a lab practical on the biodiversity of animals and plants.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - BYS120 - ORGANISMAL BIOLOGY (3)

**Charger Foundations**

Area III: Natural (Lab) Science

## **BYS205 - CODING ALGORITHMS FOR BIOLOGY**

### **Long Course Title**

CODING ALGORITHMS FOR BIOLOGY

### **Course Description**

In this class students will learn basic computer architecture, then programming in Fortran and Perl. They will then be presented with a series of research challenges from biological systems for which they will design a computing approach. Success in this class requires as prerequisites BYS 119 and BYS 120, good studying skills, and solid math and reading skills.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
  - 3 hours from:
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA172 - CALCULUS II (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

## **BYS214 - INFECTION & IMMUNITY**

### **Long Course Title**

INFECTION & IMMUNITY

### **Course Description**

Lecture/Lab. Two 2-hour labs a week. Principles of microbiology with emphasis on infectious disease of humans; epidemiological and immunological aspects. No credit for students who have credit for BYS 321 or advanced microbiology courses. Recommended for students in the College of Nursing.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)

### **Corequisites**

- Concurrently enrolled in:
  - BYS214L - INFECTION & IMMUNITY LAB

## **BYS214L - INFECTION & IMMUNITY LAB**

### **Long Course Title**

INFECTION & IMMUNITY LABORATORY

### **Course Description**

Complements material for BYS 214

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - BYS214 - INFECTION & IMMUNITY (4)

## **BYS215 - HUMAN ANATOMY & PHYSIOLOGY I**

### **Long Course Title**

HUMAN ANATOMY & PHYSIOLOGY I

### **Course Description**

BYS 215 and laboratory (one 3-hour lab per week), is designed primarily for the Nursing and Kinesiology majors. Course and laboratory material focus on the use of anatomical terminology, major tissues of the body and in-depth study of skeletal, muscular and nervous system physiology. Basic pathology is also presented to prepare students for clinicals. Laboratory material reinforces the lecture content with detailed identification of bones, joints, surface markings, and human musculature.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - Chemistry
  - Complete 1 of the following
    - Earn a minimum grade of D- in all of the following:
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
    - Earn a minimum grade of D- in all of the following:
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
    - Earn a minimum grade of D- in all of the following:
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - CH155 - GENORGBIOCHEM LAB (1)

### **Corequisites**

- Concurrently enrolled in:
  - BYS215L - HUMAN ANAT & PHYS I LAB

### **Charger Foundations**

Area III: Natural (Lab) Science

**BYS215L - HUMAN ANAT & PHYS I LAB****Long Course Title**

HUMAN ANATOMY & PHYSIOLOGY I LABORATORY

**Course Description**

An introduction to anatomical terminology; basic histology of normal tissues versus common pathologies. Focus on the human skeletal and muscular systems. Students are engaged in recognition of individual bones, surface markings, and major muscles through dissection and use of muscular models.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)

**Charger Foundations**

Area III: Natural (Lab) Science

**BYS216 - HUMAN ANATOMY & PHYSIOLOGY II****Long Course Title**

HUMAN ANATOMY & PHYSIOLOGY II

**Course Description**

BYS 216 and laboratory (one 3-hour lab per week) is designed as a continuum for the Nursing and Kinesiology majors. Course and laboratory material focus on the structures and organization of the central and peripheral nervous system, neurotransmitters, cardiovascular, renal, respiratory, digestive, and detailed study of the endocrine systems. Basic pathology is also presented to prepare students for clinicals. Laboratory material reinforces the lecture content with dissections of key organs, study of blood flow, identification of major blood vessels and nerves, and explanations of various diagnostic tests (EKG/ECG).

**Credits**

4

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)

**Corequisites**

- Concurrently enrolled in:
  - BYS216L - HUMAN ANAT & PHYS II LAB



## **BYS216L - HUMAN ANAT & PHYS II LAB**

### **Long Course Title**

HUMAN ANATOMY & PHYSIOLOGY II LABORATORY

### **Course Description**

Study of the anatomy of the nervous, cardiovascular, respiratory, renal, and digestive systems. Dissections of eye, brain, heart, lung, and kidney. Basic EKG/ECG reading and a study of factors affecting blood pressure. Enzymatic action of the digestive system; basic urinalysis determinations.

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)

## **BYS219 - GENETICS AND EVOLUTION**

### **Long Course Title**

GENETICS AND EVOLUTION

### **Course Description**

Hereditary basis of organisms; genes as the discrete units of inheritance, and genes in organisms and populations. Mendelian principles and evolutionary processes. Replication, transcription, and translation of DNA, RNA, and proteins.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
  - Earn a minimum grade of C- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH121 - GENERAL CHEMISTRY I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - MA150 - CALCULUS I WITH FOUNDATIONS A (3)

## **BYS221 - GENETICS AND EVOLUTION LAB**

### **Long Course Title**

GENETICS AND EVOLUTION LABORATORY

### **Course Description**

Laboratory activities include experiments to further students understanding in Medelian genetics, molecular biology, and human genetic diseases.

### **Credits**

1

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - BYS219 - GENETICS AND EVOLUTION (3)

## **BYS230 - HUMAN EVOLUTION & CULTURE**

### **Course Description**

This course will explore how evolutionary principles relate to our day to day lives. From discovering our place in the Tree of Life to discussing practical applications - we will traverse diverse corners of human biology and culture through the lens of evolution to better understand the human experience.

### **Credits**

3

## **BYS292 - INTRO TO BIOLOGICAL RESEARCH**

### **Long Course Title**

INTRODUCTION TO BIOLOGICAL RESEARCH

### **Course Description**

Introduction to the principles and practices of biological research. Covers experimental design, statistical analysis, critical review of journal articles, responsible conduct of research, and writing for the biological sciences. Recommended for students planning to do undergraduate research.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - EH101 - COLLEGE WRITING I (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA172 - CALCULUS II (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

**BYS300 - CELL & DEVELOPMENTAL BIOLOGY****Long Course Title**

CELL & DEVELOPMENTAL BIOLOGY

**Course Description**

Lecture/Lab. One lab per week. Introduces the student to topics in cell and developmental biology. Subjects include cell structure, organelles, cytoskeleton, secretory pathway, cell division, cell cycle, cell interaction and control of differentiation.

**Credits**

4

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH201 - ELEM ORGANIC CHEMISTRY (3)

**Corequisites**

- Concurrently enrolled in:
  - BYS300L - CELL & DEVELOPMENTAL BIO LAB

**BYS300L - CELL & DEVELOPMENTAL BIO LAB****Long Course Title**

CELL & DEVELOPMENTAL BIOLOGY LABORATORY

**Course Description**

Complements material for BYS 300

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

**BYS301 - ELEMENTARY BIOCHEMISTRY****Long Course Title**

ELEMENTARY BIOCHEMISTRY

**Course Description**

Biochemistry and energetics of living cells, metabolism, structure and function of carbohydrates, lipids, proteins, and nucleic acid. Enzymes, coenzymes, vitamins, blood, endocrine glands, DNA synthesis, and gene expression.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH201 - ELEM ORGANIC CHEMISTRY (3)
    - CH331 - ORGANIC CHEMISTRY I (3)

**Equivalent Course(s)**

CH301 - ELEMENTARY BIOCHEMISTRY

**BYS302 - PEOPLE, PLANTS & ENVIRONMENT****Long Course Title**

PEOPLE, PLANTS & ENVIRONMENT

**Course Description**

This course is designed to introduce students from multiple departments to the vital roles that plants have in our ecosystems through the study of basic plant and soil science. Special attention is placed on the impact that plants have on our technology-based society.

**Credits**

3

**BYS305 - PRE-HEALTH PROFESSIONS SEMINAR****Long Course Title**

PRE-HEALTH PROFESSIONS - PROFESSIONAL DEVELOPMENT SEMINAR

**Course Description**

This course is intended for Pre-Health Professions students who intend to apply to health-care related professional schools in the next application cycle. The primary goal of the course is to prepare students to apply for the pre-health professions program of their choice. Healthcare fields include but are not limited to medical, veterinary, dental, physician assistant, physical therapy, occupational therapy. Not for BYS major or minor credit.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Students must be a registered Pre-Health Professions student
  - Recommended: BYS 100 with a C grade or higher.

**BYS311 - INTRO MOLECULAR UNDSST BIO SYST****Long Course Title**

INTRODUCTION TO MOLECULAR UNDERSTANDING OF BIOLOGICAL SYSTEMS

**Course Description**

Introduction to a molecular understanding of genes, gene expression, and genetic engineering in selected prokaryotic and eukaryotic systems. Includes examples of biotechnology applications.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CH331 - ORGANIC CHEMISTRY I (3)

**BYS312 - PRINCIPLES OF ECOLOGY****Long Course Title**

PRINCIPLES OF ECOLOGY

**Course Description**

Lecture/Lab. One lab a week. Population structure and growth, competition, predation, symbiosis, biogeochemical cycling and energy flow, disturbance and community dynamics, biodiversity and conservation. Field trips required.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS120 - ORGANISMAL BIOLOGY (3)

**Corequisites**

- Rule Not Selected

**Equivalent Course(s)**

AES312 - PRINCIPLES OF ECOLOGY

## **BYS313 - ANATOMY & PHYSIOLOGY I**

### **Long Course Title**

ANATOMY & PHYSIOLOGY I

### **Course Description**

Lecture/Lab. One lab a week. Structure and function of the human body. Anatomy of the skeletal and muscular systems, physiology of membranes, cellular and epithelial transport and nervous system function. Appropriate preparation for professional schools/graduate study in biological sciences.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
  - Earned minimum grade of D- or concurrently enrolled in at least 1 of the following:
    - CH201 - ELEM ORGANIC CHEMISTRY (3)
    - CH331 - ORGANIC CHEMISTRY I (3)

### **Corequisites**

- Concurrently enrolled in:
  - BYS313L - ANATOMY & PHYSIOLOGY I LAB

## **BYS313L - ANATOMY & PHYSIOLOGY I LAB**

### **Long Course Title**

ANATOMY & PHYSIOLOGY I LABORATORY

### **Course Description**

Laboratory activities on the basic concept of system physiology including a rat dissection. Focuses on membrane transport and histology, and include gross anatomy and a study of the muscles and bones of the human body. Capstone student research project on electromyography of muscles.

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - BYS313 - ANATOMY & PHYSIOLOGY I (4)

**BYS314 - ANATOMY & PHYSIOLOGY II****Long Course Title**

ANATOMY & PHYSIOLOGY II

**Course Description**

Lecture and one lab a week. Continuation of BYS 313 stressing structural and functional relationships of major organ systems, focusing on heart, brain, lungs, kidney, and the gastrointestinal tract. Appropriate for students preparing for professional schools or graduate study in biological sciences.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS313 - ANATOMY & PHYSIOLOGY I (4)

**Corequisites**

- Concurrently enrolled in:
  - BYS314L - ANATOMY & PHYSIOLOGY II LAB

**BYS314L - ANATOMY & PHYSIOLOGY II LAB****Long Course Title**

ANATOMY & PHYSIOLOGY II LAB

**Course Description**

Research-intensive system-based laboratory course. Includes brain dissection, a student EEG project, heart dissection, and a cardiovascular physiology project. This is followed by a pulmonary function lab and a renal function lab where students calculate their own glomerular filtration rate.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - BYS314 - ANATOMY & PHYSIOLOGY II (4)

## **BYS315 - ICHTHYOLOGY**

### **Long Course Title**

ICHTHYOLOGY

### **Course Description**

Classification, anatomy, physiology, and ecology of freshwater and marine fishes. Emphasizes fishes of north Alabama. Laboratory and field trips required.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

## **BYS317 - VERTEBRATE ZOOLOGY**

### **Long Course Title**

VERTEBRATE ZOOLOGY

### **Course Description**

Lecture/Lab. Two three-hour labs a week. Morphology of vertebrate animals. Relationship of organs and systems and their phylogenetic significance.

### **Credits**

5

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)



## **BYS318 - VERTEBRATE REPRODUCTION**

### **Long Course Title**

VERTEBRATE REPRODUCTION

### **Course Description**

General treatment of the major concepts and controversial areas of comparative vertebrate reproduction: ecological and evolutionary aspects, development of reproductive functions and sexual behavior, seasonal breeding and other topics of current interest.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

## **BYS320 - MEDICAL TERMINOLOGY**

### **Long Course Title**

MEDICAL TERMINOLOGY

### **Course Description**

The meaning, spelling, etymology and pronunciation of major medical terms related to anatomy, pathology, medical professions, procedures and pharmaceuticals; body systems, their associated diseases and disorders. Correct usage of terms and interpretation of documents containing these terms. Hybrid course with online and in-class portions.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
  - Earn a minimum grade of D- in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

**BYS321 - GENERAL MICROBIOLOGY I****Long Course Title**

GENERAL MICROBIOLOGY I

**Course Description**

Structure, biochemistry, and genetics of microorganisms, control of microbial growth, and microorganisms as pathogens. Lab covers basic and diagnostic methods in microbiology, environmental factors controlling microbial growth and survival, and characteristics of medically important microorganisms.

**Credits**

4

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

**Corequisites**

- Concurrently enrolled in:
  - BYS321L - GENERAL MICROBIOLOGY I LAB

**BYS321L - GENERAL MICROBIOLOGY I LAB****Long Course Title**

GENERAL MICROBIOLOGY I LABORATORY

**Course Description**

Complements material for BYS 321

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - BYS321 - GENERAL MICROBIOLOGY I (4)

**BYS347 - BIOPHYSICAL CHEMISTRY I****Long Course Title**

BIOPHYSICAL CHEMISTRY I

**Course Description**

First and second laws of thermodynamics. Free energy and equilibrium. Colligative properties of solutions. Ionic equilibria. Electrochemistry. Reaction kinetics. Enzyme catalysis. Adsorption and surface tension. Same as CH 347.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CH332 - ORGANIC CHEMISTRY II (3)
  - MA172 - CALCULUS II (4)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

**Equivalent Course(s)**

CH347 - BIOPHYSICAL CHEMISTRY I

**BYS348 - BIOPHYSICAL CHEMISTRY II****Long Course Title**

BIOPHYSICAL CHEMISTRY II

**Course Description**

Viscosity, diffusion, sedimentation, electrophoresis, determination of molecular weight by osmotic pressure. Light scattering and photochemistry. Elementary IR, UV-VIS, ESR, NMR spectroscopy. Fluorescence. Optical rotation. Same as CH 348.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - BYS347 - BIOPHYSICAL CHEMISTRY I (3)
  - CH347 - BIOPHYSICAL CHEMISTRY I (3)

**Equivalent Course(s)**

CH348 - BIOPHYSICAL CHEMISTRY II

## **BYS361 - GENERAL BIOCHEMISTRY**

### **Course Description**

This course concentrates in biochemical nomenclature, structure, function, and properties of amino acids, carbohydrates, lipids, nucleic acids, proteins, and enzymes. Major catabolic pathways, their integration and control mechanisms are also studied, including Glycolysis, Fatty Acid and Amino Acid Oxidation, Citric Acid Cycle, and Oxidative Phosphorylation. Same as CH 361.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS311 - INTRO MOLECULAR UNDST BIO SYST (3)
  - Earn a minimum grade of C- in all of the following:
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CHE201 - INTRO CHEMICAL ENGR PROCESS (2)

### **Equivalent Course(s)**

CH361 - GENERAL BIOCHEMISTRY

## **BYS362 - GENERAL BIOCHEMISTRY LAB**

### **Long Course Title**

GENERAL BIOCHEMISTRY LABORATORY

### **Course Description**

One 3-hour lab a week. Practical experience in isolation, qualitative identification, and quantitative estimation of biomolecules. Same as CH 362.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - Earned minimum grade of D- or concurrently enrolled in at least 1 of the following:
    - BYS361 - GENERAL BIOCHEMISTRY (3)
    - CH361 - GENERAL BIOCHEMISTRY (3)

### **Equivalent Course(s)**

CH362 - GENERAL BIOCHEMISTRY LAB

**BYS363 - GENERAL BIOCHEMISTRY II****Long Course Title**

GENERAL BIOCHEMISTRY II

**Course Description**

A continuation of BY3 361 to include amino acid oxidation, biosynthesis of biomolecules, integration of metabolism, DNA and RNA metabolism, protein biosynthesis, and gene structure. Same as CH 363.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - BY3361 - GENERAL BIOCHEMISTRY (3)
  - CH361 - GENERAL BIOCHEMISTRY (3)

**Equivalent Course(s)**

CH363 - GEN BIOCHEMISTRY II

**BYS364 - BIOGEOGRAPHY****Long Course Title**

BIOGEOGRAPHY

**Course Description**

Why plants and animals live where they do. Principles governing plant and animal distribution and dispersal, using the communities of North America as prime examples. Strongly recommended: BY3 312.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BY3120 - ORGANISMAL BIOLOGY (3)
    - BY3219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BY3300 - CELL & DEVELOPMENTAL BIOLOGY (4)

**BYS365 - GENERAL BIOCHEMISTRY LAB II****Long Course Title**

GENERAL BIOCHEMISTRY LABORATORY II

**Course Description**

Experimental course illustrating the topics in BYS 363.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Complete 1 of the following
    - Earn a minimum grade of D- in all of the following:
      - BYS361 - GENERAL BIOCHEMISTRY (3)
      - BYS362 - GENERAL BIOCHEMISTRY LAB (1)
    - Earn a minimum grade of D- in all of the following:
      - CH361 - GENERAL BIOCHEMISTRY (3)
      - CH362 - GENERAL BIOCHEMISTRY LAB (1)
  - Earned minimum grade of D- or concurrently enrolled in at least 1 of the following:
    - BYS363 - GENERAL BIOCHEMISTRY II (3)
    - CH363 - GEN BIOCHEMISTRY II (3)

**Equivalent Course(s)**

CH364 - GEN BIOCHEMISTRY LAB II

**BYS400 - NEUROBIOLOGY****Course Description**

A discussion of the cellular architecture of the nervous system, with emphasis on the biochemical and electrophysiological properties of neurons and glia that control cognition, learning and memory, emotion, sensation and perception, endocrine regulation, and neurological illness. An overview of molecular research methods used to investigate neural function.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH201 - ELEM ORGANIC CHEMISTRY (3)

**Equivalent Course(s)**

**BYS405 - PSYCHOPHARMACOLOGY****Long Course Title**

PSYCHOPHARMACOLOGY

**Course Description**

Introduction to drug classification and action with emphasis on physiological and psychological interactions.

**Credits**

3

**Equivalent Course(s)**

PY405 - PSYCHOPHARMACOLOGY

**Cross-Listed Course**

BYS505 - PSYCHOPHARMACOLOGY

**BYS410 - BYS UG INTERN****Long Course Title**

BIOLOGY UNDERGRADUATE INTERNSHIP

**Course Description**

This course enables a student to get UAH credits for a paid or unpaid internship in a field related to biology. Arrangements must be made between the internship supervisor and the UAH instructor.

**Credits**

1 - 6

**BYS417 - PRINCIPLES OF PLANT PHYSIOLOGY****Long Course Title**

PRINCIPLES OF PLANT PHYSIOLOGY

**Course Description**

The objectives in the development of this course is to provide students with an opportunity to: (1) study the principles of plant physiology (2) to gain an understanding of the complexity of plant genetics and stress response pathways (hormones) as well as (3) to appreciate how dependent we are on plants from those in our forests and environment to those in agricultural production and beyond. Laboratory experiments will provide an additional opportunity for students to take the lecture material and gain actual experience in the growth, nutritional requirements, and maintenance of a wide variety of plants through the semester via work on campus as well as in the UAH Greenhouse..

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS219 - GENETICS AND EVOLUTION (3)

**Cross-Listed Course**

BYS517 - PRINCIPLES OF PLANT PHYSIOLOGY

## **BYS419 - MICROBIAL GENETICS**

### **Long Course Title**

MICROBIAL GENETICS

### **Course Description**

Transmission, expression, and evolution of genes in microorganisms. Studies of chromosomes, plasmids, transposons, bacteriophages, and other genetic elements.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS321 - GENERAL MICROBIOLOGY I (4)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

## **BYS420 - BIOTECHNOLOGY**

### **Course Description**

Biotechnology is an advanced Undergraduate course that provides insight of how bacteria, viruses, and fungi are manipulated and used to solve human problems. This course is designed based on topics recommended by American Society of Microbiology.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS419 - MICROBIAL GENETICS (3)

## **BYS430 - IMMUNOLOGY**

### **Long Course Title**

IMMUNOLOGY

### **Course Description**

Lecture/Lab. One 3-hour lab per week. Innate, humoral, and cell-mediated immunity. Immune deficiencies and hypersensitivities. Autoimmunity, transplantation, and tumor immunology.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS321 - GENERAL MICROBIOLOGY I (4)
  - Earned minimum grade of D- or concurrently enrolled in at least 1 of the following:
    - BYS361 - GENERAL BIOCHEMISTRY (3)
    - CH361 - GENERAL BIOCHEMISTRY (3)



**BYS431 - BIOLOGICAL DATA SKILLS****Long Course Title**

BIOLOGICAL DATA SKILLS

**Course Description**

This course covers a range of computational skills needed specifically for biologists who do not have any training in computer science. The course focuses on command line tools, basic programming in Python, and various aspects of data handling including, data curation, organization, storage, querying, and archiving. The course will include a project that ties together skills that are useful for individual students.

**Credits**

3

**Cross-Listed Course**

BYS531 - BIOLOGICAL DATA SKILLS

**BYS432 - PRINC OF SIGNAL TRANSDUCTION****Long Course Title**

PRINCIPLES OF SIGNAL TRANSDUCTION

**Course Description**

This course will introduce the broad principles of intracellular signal transduction. More detail lectures on specific intracellular signaling pathways will be given where students will learn both the basic and the most recent and cutting edge concepts of intracellular signaling. Appropriate for undergraduate and graduate studies in biological sciences, researchers new to the field and those actively working in the general area.

**Credits**

2

**BYS433 - RESEARCH SEMINAR ATTENDANCE****Long Course Title**

RESEARCH SEMINAR ATTENDANCE

**Course Description**

This course gives upper level biology majors a chance to gain exposure to research in biology. Students will attend seminars and learn about how research projects are planned and interpreted. Additionally they will learn how scientists present their research.

**Credits**

1

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

**BYS436 - BIOLOGICAL PSYCHOLOGY****Long Course Title**

BIOLOGICAL PSYCHOLOGY

**Course Description**

Functional analysis of neural and endocrine systems underlying behavior. Same as PY 436.

**Credits**

3

**Equivalent Course(s)**

PY436 - BIOLOGICAL PSYCHOLOGY

**BYS437 - PSYCHOBIOLOGY STRESS & ILLNESS****Long Course Title**

PSYCHOBIOLOGY STRESS & ILLNESS

**Course Description**

Overview of psychological stress responses and their influence on health, behavior, and illness. Same as PY 437.

**Credits**

3

**Prerequisites**

- Instructor Permission Required

**Equivalent Course(s)**

PY437 - PSYCHOBIOLOGY STRESS & ILLNESS

**Cross-Listed Course**

BYS537 - PSYCHOBIOLOGY STRESS & ILLNESS

**BYS461 - HERPETOLOGY****Long Course Title**

HERPETOLOGY

**Course Description**

Classification, diversity, anatomy function, ecology, behavior, and evolution of amphibians and reptiles. Laboratory and field trips devoted to anatomy and identification, with an emphasis on Alabama and southeastern U.S. species.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS219 - GENETICS AND EVOLUTION (3)

**Cross-Listed Course**

BYS561 - HERPETOLOGY

**BYS464 - EVOLUTION****Long Course Title**

EVOLUTION

**Course Description**

Principles of evolution and speciation. Nature of species, selection and adaptation, divergence and cladogenesis, isolation, hybridization, and phylogeny.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

**BYS466 - ORNITHOLOGY****Long Course Title**

ORNITHOLOGY

**Course Description**

An examination of birds, including classification, diversity, anatomy, function, ecology, behavior, and evolution. Laboratory and field trips devoted to anatomy and identification, with an emphasis on Alabama and southeastern U. S. species.

**Credits**

4

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - BYS312 - PRINCIPLES OF ECOLOGY (4)

**Cross-Listed Course**

BYS566 - ORNITHOLOGY

**BYS467 - ANIMAL BEHAVIOR****Long Course Title**

ANIMAL BEHAVIOR

**Course Description**

This course examines the role of animal behavior in survival and reproduction. It emphasizes the genetic, morphological, and physiological basis of behavior. Particular emphasis is placed on the mechanisms underlying behavior and their evolutionary significance.

**Credits**

3

**Cross-Listed Course**

BYS567 - ANIMAL BEHAVIOR

**BYS469 - RADIATION BIOLOGY****Long Course Title**

RADIATION BIOLOGY

**Course Description**

The course will provide fundamental knowledge of the interaction and responses of the human body to ionizing radiation, and how to leverage it to manage cancer and to make objective decisions regarding the relative risks and benefits of radiation use in a variety of applications; and introduce basic practice in radiation oncology physics.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS313 - ANATOMY & PHYSIOLOGY I (4)
  - Earn a minimum grade of C- in all of the following:
    - PH113 - GEN PHYSICS W/CALC III (3)

**Equivalent Course(s)**

PH469 - RADIATION BIOLOGY

## **BYS490 - SENIOR CAPSTONE**

### **Long Course Title**

SENIOR CAPSTONE

### **Course Description**

Discussions, readings, and presentations of topical biological subjects using scientific literature. Capstone course emphasizing refinement of oral and written communication skills and critical thinking. All students will take ETS Major Field Test in Biology as part of the course grade.

### **Credits**

2

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)

## **BYS491 - SPECIAL TOPICS BIOLOGICAL SCI**

### **Long Course Title**

SPECIAL TOPICS BIOLOGICAL SCIENCES

### **Course Description**

Directed readings and/or written reports on topics of interest to individual students carried out under supervision of an instructor.

### **Credits**

1 - 4

### **Prerequisites**

- Instructor Permission Required

## **BYS492 - UNDERGRADUATE RESEARCH**

### **Long Course Title**

UNDERGRADUATE RESEARCH

### **Course Description**

For advanced-level biological sciences students with biological sciences GPA of 3.5 or above. Individual investigations into biological problems under direct supervision of instructor. May also be taken at the Marine Environmental Sciences Consortium, Dauphin Island, Alabama.

### **Credits**

2 - 4

### **Prerequisites**

- Complete all of the following
  - Instructor Permission Required
  - Earned a minimum cumulative GPA of 3.5

**BYS499 - UNGRAD HONORS RES & THESIS****Long Course Title**

UNGRADUATE HONORS RES & THESIS

**Course Description**

Individual investigations into biological problems under direct supervision of instructor. For honors students majoring in the biological sciences.

**Credits**

2 - 4

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Instructor, Chair, and Honors Dean Permission Required
  - Student must have the following placement: Honors College (PLHP 7777)

**BYS501 - INTRO BYS GRAD STUDIES****Long Course Title**

INTRODUCTION TO BIOLOGY GRADUATE STUDIES

**Course Description**

This course exposes new graduate students to the resources, skills, and approaches to be successful in independent research and graduate studies in the biological sciences. In addition, students will receive introductory training in developing research questions; study design, data analysis, searching and critically reviewing the scientific literature, oral and written scientific communication, proposal and grant writing, teaching and mentoring, ethical conduct of research and behavior, time management, and career planning.

**Credits**

1

**BYS505 - PSYCHOPHARMACOLOGY****Long Course Title**

PSYCHOPHARMACOLOGY

**Course Description**

Introduction to drug classification and action with emphasis on physiological and psychological interactions. Same as PY 505

**Credits**

3

**Equivalent Course(s)**

PY505 - PSYCHOPHARMACOLOGY

**Cross-Listed Course**

BYS405 - PSYCHOPHARMACOLOGY

**BYS517 - PRINCIPLES OF PLANT PHYSIOLOGY****Long Course Title**

PRINCIPLES OF PLANT PHYSIOLOGY

**Course Description**

The objectives in the development of the plant physiology course are to provide students with opportunities to: (1) study the biological functions of plants from the whole organism to the cellular level; (2) to gain an understanding of the complexity of plant genetics, stress response pathways (hormones) and nutritional requirements of plants; (3) to explore the symbiotic relationship of plants and the mycorrhizae and (4) to appreciate how dependent human beings are on plants from those in our forests and environment, to those in agricultural production and beyond. Students will develop an individualized research proposal and will also participate in class experimentation of tissue culture techniques, effects of plant growth regulators, phototropic response(s) on growth and development as well as other primary topics throughout the semester.

**Credits**

4

**Cross-Listed Course**

BYS417 - PRINCIPLES OF PLANT PHYSIOLOGY

**BYS519 - GENE STRUCTURE & FUNCTION****Long Course Title**

GENE STRUCTURE & FUNCTION

**Course Description**

Advanced studies of macromolecular structure and biological function of proteins and nucleic acids involved in the passage of genetic information and cellular response. Structural significance of viruses and molecular evolution included.

**Credits**

3

**BYS523 - PRINCIPLES OF VIROLOGY/A&M****Long Course Title**

PRINCIPLES OF VIROLOGY - TAUGHT ON ALABAMA A&M CAMPUS

**Course Description**

Course offered jointly by Alabama A&M University and UAH but which is taught on the A&M campus. Principles of viral infectivity, multiplication, and chemical constitution; laboratory techniques for their isolation, cultivation, identification, and enumeration.

**Credits**

3

**BYS524 - MYCOLOGY/A&M****Long Course Title**

MYCOLOGY - TAUGHT ON ALABAMA A&M CAMPUS

**Course Description**

Course offered jointly by Alabama A&M University and UAH but which is taught on the A&M campus. Lines of phycomycetes using representative species; various series of actinomycetes; representative pathogenic (crop and vegetative pathogens) and nonpathogenic heterobasidiomycetideae organisms; order and families of homobasidiomycetidae. Ontogenetics, cellular, and structural study applied to all divisions, classes, series, orders, and families.

**Credits**

3

**BYS526 - MICROBIAL ECOLOGY/A&M****Long Course Title**

MICROBIAL ECOLOGY - TAUGHT ON ALABAMA A&M CAMPUS

**Course Description**

Course offered jointly by Alabama A&M University and UAH but which is taught on the A&M campus. Relationship of soil and aquatic microorganisms and their importance in ammonification, nitrification, and other biological processes.

**Credits**

4

**BYS531 - BIOLOGICAL DATA SKILLS****Long Course Title**

BIOLOGICAL DATA SKILLS

**Course Description**

This course covers a range of computational skills needed specifically for biologists who do not have any training in computer science. The course focuses on command line tools, basic programming in Python, and various aspects of data handling including, data curation, organization, storage, querying, and archiving. The course will include a project that ties together skills that are useful for individual students.

**Credits**

3

**Cross-Listed Course**

BYS431 - BIOLOGICAL DATA SKILLS

**BYS535 - ADVANCED MICROBIOLOGY****Long Course Title**

ADVANCED MICROBIOLOGY

**Course Description**

Aspects of microbial behavior, development, morphogenesis or physiology.

**Credits**

3



**BYS537 - PSYCHOBIOLOGY STRESS & ILLNESS****Long Course Title**

PSYCHOBIOLOGY STRESS & ILLNESS

**Course Description**

Overview of physiological stress responses and their influence on health, behavior, and illness. Same as PY 536.

**Credits**

3

**Equivalent Course(s)**

PY537 - PSYCHOBIOLOGY STRESS & ILLNESS

**Cross-Listed Course**

BYS437 - PSYCHOBIOLOGY STRESS & ILLNESS

**BYS542 - NUTRITIONAL PHYSIOLOGY/A&M****Long Course Title**

NUTRITIONAL PHYSIOLOGY - TAUGHT ON ALABAMA A&M CAMPUS

**Course Description**

Course offered jointly by Alabama A&M University and UAH but which is taught on the A&M campus. Advanced laboratory dealing with modern techniques of molecular biology and biochemistry.

**Credits**

3

**BYS543 - MOLECULAR BIOLOGY OF THE CELL****Long Course Title**

MOLECULAR BIOLOGY OF THE CELL

**Course Description**

Advanced study of cell structure and function of macromolecules (lipids, proteins, carbohydrates and nucleotides). In depth literature readings on subcellular organelles, metabolic pathways, cell cycle, cancer, and cell differentiation.

**Credits**

3

**BYS547 - BIOCHEMISTRY I****Long Course Title**

BIOCHEMISTRY I

**Course Description**

Structural chemistry and function of biomolecules, mechanisms of biochemical reactions, and enzyme kinetics. Same as: CH 561.

**Credits**

3

**Equivalent Course(s)**

CH561 - BIOCHEMISTRY I

**BYS548 - BIOCHEMISTRY II****Long Course Title**

BIOCHEMISTRY II

**Course Description**

Energy transduction, metabolism, biosynthesis of macromolecular precursors, storage, transmission, and expression of genetic information. Same as CH 562.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - BYS547 - BIOCHEMISTRY I (3)
  - CH561 - BIOCHEMISTRY I (3)

**Equivalent Course(s)**

CH562 - BIOCHEMISTRY II

**BYS556 - ADV MOLECULAR TECHNIQUES****Long Course Title**

ADVANCED MOLECULAR TECHNIQUES

**Course Description**

Laboratory techniques in molecular biology including current methodology in genomics, proteomics, and RNA analysis.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - BYS519 - GENE STRUCTURE & FUNCTION (3)

**BYS560 - ENVIRONMENTAL BIOLOGY/A&M****Long Course Title**

ENVIRONMENTAL BIOLOGY - TAUGHT ON ALABAMA A&M CAMPUS

**Course Description**

Course offered jointly by Alabama A&M University and UAH but which is taught on the A&M campus. Principles of interaction between living systems and their resources. Current problems in management of natural resources including new approaches in management of pest populations.

**Credits**

3

**BYS561 - HERPETOLOGY****Long Course Title**

HERPETOLOGY

**Course Description**

Classification, diversity, anatomy function, ecology, behavior, and evolution of amphibians and reptiles. Laboratory and field trips devoted to anatomy and identification, with an emphasis on Alabama and southeastern U.S. species.

**Credits**

4

**Cross-Listed Course**

BYS461 - HERPETOLOGY

**BYS562 - COMMUNITY ECOLOGY****Long Course Title**

COMMUNITY ECOLOGY

**Course Description**

Detailed consideration of ecological principles and concepts, as well as biotic and abiotic factors relevant to development of communities and ecosystems. Field trips required.

**Credits**

4

**BYS563 - POPULATION ECOLOGY****Long Course Title**

POPULATION ECOLOGY

**Course Description**

Distribution, population dynamics, and behavior of populations in relation to environmental factors. Field trips required.

**Credits**

4

**BYS564 - LIMNOLOGY****Long Course Title**

LIMNOLOGY

**Course Description**

Fresh-water environments and organisms exemplified by lakes, ponds, and streams in North Alabama.

**Credits**

3

**BYS566 - ORNITHOLOGY****Long Course Title**

ORNITHOLOGY

**Course Description**

An examination of birds, including classification, diversity, anatomy, function, ecology, behavior, and evolution. Laboratory and field trips devoted to anatomy and identification, with an emphasis on Alabama and southeastern U.S. species.

**Credits**

4

**Cross-Listed Course**

BYS466 - ORNITHOLOGY

**BYS567 - ANIMAL BEHAVIOR****Long Course Title**

ANIMAL BEHAVIOR

**Course Description**

This course examines the role of animal behavior in survival and reproduction. It emphasizes the genetic, morphological, and physiological basis of behavior. Particular emphasis is placed on the mechanisms underlying behavior and their evolutionary significance.

**Credits**

3

**Cross-Listed Course**

BYS467 - ANIMAL BEHAVIOR

**BYS591 - SPECIAL TOPICS BIOLOGICAL SCI****Long Course Title**

SPECIAL TOPICS BIOLOGICAL SCIENCES

**Course Description**

This is a special topics course that will vary based on instructor and the semester taught. All content of this course is variable. Material taught is selected such that it is appropriate for a 500-level Biology course. Objectives Since this is a special topics course, objectives will vary based on instructor and the semester taught. All content of this course is variable.

**Credits**

1 - 4

**Restrictions**

None

**BYS600 - NEUROSCIENCE****Course Description**

A discussion of the cellular architecture of the nervous system, with emphasis on the biochemical and electrophysiological properties of neurons and glia that control cognition, learning and memory, emotion, sensation and perception, endocrine regulation, and neurological illness. An overview of molecular research methods used to investigate neural function. Previous completion of an upper-level, undergraduate course in cell biology is strongly recommended.

**Credits**

3

**BYS601 - BIOINFORMATICS I****Long Course Title**

BIOINFORMATICS I

**Course Description**

Practical use in bioinformatics and X-ray crystallography.

**Credits**

3

**BYS602 - BIOINFORMATICS II****Long Course Title**

BIOINFORMATICS II

**Course Description**

Practical use in bioinformatics and applied genomics.

**Credits**

3

**BYS610 - BYS GRAD INTERN****Long Course Title**

BIOLOGY GRADUATE INTERNSHIP

**Course Description**

This course enables a student to get UAH credits for a paid or unpaid internship in a field related to biology. Arrangements must be made between the internship supervisor and the UAH instructor.

**Credits**

1 - 5

**BYS619 - MICROBIAL GENETICS****Long Course Title**

MICROBIAL GENETICS

**Course Description**

Transmission, expression, and evolution of genes in microorganisms. Studies of chromosomes, plasmids, transposons, bacteriophages, and other genetic elements.

**Credits**

3

**BYS620 - MICROBIAL BIOTECHNOLOGY****Course Description**

Microbial Biotechnology is a Graduate course that provides insight into how bacteria, viruses, and fungi are manipulated and used to solve problems that Human faces. This course is designed based on topics that the American Society of Microbiology recommends. This course contains a laboratory component with three extensive procedures to introduce graduate students to modern microbial methodologies employed to isolate microorganisms and clone genes and study their functions and applications. Graduate students also benefit by presenting and discussing current papers in selective areas of microbial biotechnology.

**Credits**

4

**Cross-Listed Course****BYS630 - IMMUNOLOGY****Long Course Title**

IMMUNOLOGY

**Course Description**

Innate, humoral, and cell-mediated immunity. Immune deficiencies and hypersensitivities. Autoimmunity, transplantation, and tumor immunology.

**Credits**

4

**BYS631 - MEDICAL PHARMACOLOGY/A&M****Long Course Title**

MEDICAL PHARMACOLOGY - TAUGHT ON ALABAMA A&M CAMPUS

**Course Description**

Course offered jointly by Alabama A&M University and UAH but which is taught on the A&M campus. Drug-receptor interaction, kinetics of drug absorption, distribution and elimination, and discussion of drugs affecting different systems. Pharmacogenetics, toxicity, mutagenesis, teratogenesis, carcinogenesis, and drug interactions. Mechanism of action of drugs, in relation to their use as therapeutic agents in medicine.

**Credits**

3

**BYS690 - SEMINAR****Long Course Title**

SEMINAR

**Course Description**

Student reports on current journal articles, research, or assigned readings. Graduate students should attend whether enrolled for credit or not. May be taken up to three times for credit.

**Credits**

1

**BYS691 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS

**Course Description**

Directed readings and/or written reports on topics of individual student interest carried out under the supervision of an instructor. Prerequisite: permission of instructor required before registration.

**Credits**

1 - 4

**Prerequisites**

- Instructor Permission Required

**BYS692 - RESEARCH****Long Course Title**

RESEARCH

**Course Description**

Individual investigations of biological problems under supervision of a graduate faculty member. Permission of instructor required before registration.

**Credits**

2 - 4

**Prerequisites**

- Instructor Permission Required

**BYS699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester student is working on and receiving direction on master's thesis. Minimum of six hours required for M.S. thesis students.

**Credits**

0 - 6

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# Biotechnology Science & Engineering

## **BSE601 - CURRENT TOPICS IN BIOTECHNOLOG**

### **Long Course Title**

CURRENT TOPICS IN BIOTECHNOLOGY

### **Course Description**

Survey of current Biotechnology literature. Students will be required to critically evaluate the assigned literature, develop detailed written summaries and present their critical evaluations to the class and the instructor.

### **Credits**

3

## **BSE620 - INT BIOINFORMATICS:FUND/METHOD**

### **Long Course Title**

INTRODUCTION TO BIOINFORMATICS:FUND/METHOD

### **Course Description**

Students will learn how computational and mathematical techniques are being used to understand DNA and protein sequences, how the information from the genome is being used to understand phenomena at a macro-level. Pre/Corequisites: Graduate student admitted to the Ph.D. program in Biotechnology Science and Engineering. Graduate students in other programs may seek permission from the Director of the Biotechnology Science and Engineering Program to take this class.

### **Credits**

3

## **BSE621 - INT BIOINFORMATICS:COMP LAB AP**

### **Long Course Title**

INTRODUCTION TO BIOINFORMATICS:COMPUTER LAB AP

### **Course Description**

Students will use a variety of computational tools and software for data mining, sequence alignment, phylogenetic analysis, clustering, quantitative metabolic pathways analysis and other topics covered in BSE 620. Pre/Corequisites: Graduate student admitted to the Ph.D. program in Biotechnology Science and Engineering. Graduate students in other programs may seek permission from the Director of the Biotechnology Science and Engineering Program to take this class.

### **Credits**

1



**BSE702 - LAB ROTATIONS IN BIOTECHNOLOGY****Long Course Title**

LAB ROTATIONS IN BIOTECHNOLOGY

**Course Description**

Acquire a broad background in biotechnology science and engineering through two 6-week rotations in an active research program under the director of faculty mentors. Students will pursue an independent research project and a detailed written report will be required at the end of each of the two 6-week rotations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - BSE601 - CURRENT TOPICS IN BIOTECHNOLOG (3)

**BSE703 - BIOTECHNOLOGY RESEARCH****Long Course Title**

BIOTECHNOLOGY RESEARCH

**Course Description**

Advanced research in a specific targeted topic under the direct supervision of a faculty member in collaboration with scientists and researchers at a biotechnology company or business or a research laboratory that has specific relevance to the biotechnology science and engineering program. Completion of this course will require a written report and an oral presentation to the faculty and students in the biotechnology program.

**Credits**

2 - 6

**BSE780 - BIOTECHNOLOGY SCI/ENG SEMINAR****Long Course Title**

BIOTECHNOLOGY SCIENCE & ENGINEERING SEMINAR

**Course Description**

Seminar for Biotechnology Science and Engineering. Current topics in Biotechnology and Bioengineering are discussed by visiting speakers from academic industries and industry.

**Credits**

1

**BSE799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on a doctoral dissertation.

**Credits**

0 - 9

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# Business

## **BUS300 - BUSINESS TRANSITIONS**

### **Long Course Title**

BUSINESS TRANSITIONS

### **Course Description**

Business Transitions is designed to assist incoming transfer students in making a fully successful transition to The University of Alabama in Huntsville, both within and beyond the classroom. The goals of this course focus on developing a sense of community, promoting engagement in the academic life of the university, and articulating to students the expectations of the university. In addition, the course will assist students in understanding and applying critical thinking skills, as well as offer support to students in clarifying their academic interests and eventual career direction.

### **Credits**

0 - 1

## **BUS315 - CREATING ENTREPRENEURIAL OPTNS**

### **Long Course Title**

CREATING ENTREPRENEURIAL OPTIONS

### **Course Description**

Creating Entrepreneurial Opportunities is an experiential, project-based course designed to utilize partnerships that provide an overview of business development and processes. It is taught in partnership with community businesses. Students visit area businesses, learn from guest speakers, participate in a class business, write business plans, and start and operate their own businesses. It is a year long course with two sequels and is primarily for dual enrolled high school students. Current UAH students can also take it but should take both sequels to reap the full benefit.

### **Credits**

1 - 3

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# Business Legal Studies

## **BLS211 - LEGAL ENVIRON/BUSINESS**

### **Long Course Title**

LEGAL ENVIRONMENT OF BUSINESS

### **Course Description**

Legal environment of business including ethical, political and technological aspects of that environment.

### **Credits**

3

**BLS400 - LAW, ETHICS & BUSINESS****Long Course Title**

LAW, ETHICS & BUSINESS

**Course Description**

An analytical review of corporate ethics addressed from a legal and business standpoint. Focus on codes of ethics, integration of integrity into corporate cultures, top management commitment to ethics, civics involvement, employer-employee relations, consumer protection, and international business.

**Credits**

3

**Cross-Listed Course**

BLS500 - LAW, ETHICS & BUSINESS

**BLS406 - GOVERNMENT CONTRACT LAW****Long Course Title**

GOVERNMENT CONTRACT LAW

**Course Description**

Application of the legal principles governing government contracts as developed from common law, statutes, regulations, and court decisions. Includes requests for proposals, negotiation, inspection, acceptance, delivery, warranties, modification of contracts, equitable adjustment, and disputes.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - MGT401 - INTRO TO CONTRACT MANAGEMENT (3)
    - ACC440 - BASIC GOV CONTRACT ACCTG (3)

**Cross-Listed Course**

BLS506 - GOVMT CONTRACT LAW

**BLS410 - BUSINESS NEGOTIATIONS****Long Course Title**

BUSINESS NEGOTIATIONS

**Course Description**

This course is designed to familiarize students with the theories, basic skills and ethics involved in negotiation. Through a combination of readings, lectures, videotapes, role-play exercises and discussion, students will develop an understanding of the dynamics of negotiation and the approaches available to a wide variety of business leaders engaged in the negotiation process. The course will include sessions in which students will have the opportunity to gain experience through role playing of simulations taken from actual cases.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - BLS211 - LEGAL ENVIRON/BUSINESS (3)

**Cross-Listed Course**

BLS510 - BUSINESS NEGOTIATIONS

**BLS411 - BUSINESS LAW FOR ACCOUNTANTS****Long Course Title**

BUSINESS LAW FOR ACCOUNTANTS

**Course Description**

In-depth study of legal principles and problems encountered in practice by professional accountants. This course covers legal topics in a Uniform Commercial Code perspective.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - BLS211 - LEGAL ENVIRON/BUSINESS (3)

**Cross-Listed Course**

BLS511 - BUS LAW FOR ACCOUNTANTS

**BLS500 - LAW, ETHICS & BUSINESS****Long Course Title**

LAW, ETHICS & BUSINESS

**Course Description**

An analytical review of corporate ethics addressed from a legal and business standpoint. Focus on codes of ethics, integration of integrity into corporate cultures, top management commitment to ethics, civic involvement, employer-employee relations, consumer protection, and international business.

**Credits**

3

**Cross-Listed Course**

BLS400 - LAW, ETHICS & BUSINESS

**BLS506 - GOVMT CONTRACT LAW****Long Course Title**

GOVERNMENT CONTRACT LAW

**Course Description**

Application of the legal principles governing government contracts as developed from common law, statutes, regulations, and court decisions. Includes requests for proposals, negotiation, inspection, acceptance, delivery, warranties, modification of contracts, equitable adjustment, and disputes.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - ACC540 - BASIC GOVERNMENT CONTRACT ACCT (3)
  - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)

**Cross-Listed Course**

BLS406 - GOVERNMENT CONTRACT LAW

**BLS510 - BUSINESS NEGOTIATIONS****Long Course Title**

BUSINESS NEGOTIATIONS

**Course Description**

This course is designed to familiarize students with the theories, basic skills, and ethics involved in negotiation. Through a combination of readings, lectures, videotapes, role-play exercises, and discussion, students will develop an understanding of the dynamics of negotiation and the approaches available to a wide variety of business leaders engaged in the negotiation process. The course will include sessions in which students will have the opportunity to gain experience through role playing of simulations taken from actual cases.

**Credits**

3

**Cross-Listed Course**

BLS410 - BUSINESS NEGOTIATIONS

**BLS511 - BUS LAW FOR ACCOUNTANTS****Long Course Title**

BUSINESS LAW FOR ACCOUNTANTS

**Course Description**

In-depth study of legal principles and problems encountered in practice by professional accountants. This course covers legal topics from a Uniform Commercial Code perspective.

**Credits**

3

**Cross-Listed Course**

BLS411 - BUSINESS LAW FOR ACCOUNTANTS

**BLS590 - SPECIAL TOPICS BUSINESS LAW****Long Course Title**

SPECIAL TOPICS BUSINESS LAW

**Course Description**

Specialized instruction of an area of interest to students in business.

**Credits**

3

**BLS625 - LEGAL ASPECTS OF ENGRS****Long Course Title**

LEGAL ASPECTS OF ENGINEERS

**Course Description**

Legal problems and principles relevant to the practice of professional engineers. The legal system, contracts, torts, business organizations, employment law, intellectual property law, and environmental law.

**Credits**

3

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## Chemical Engineering

**CHE201 - INTRO CHEMICAL ENGR PROCESS****Long Course Title**

INTRODUCTION TO CHEMICAL ENGINEERING PROCESSES

**Course Description**

Chemical engineers' impact on today's societal issues, team problem solving, communication skills, and the introduction of chemical process flow sheets. Analytical methods for solving problems related to chemical process measurements, properties of single compounds, properties of mixtures, stoichiometry. Application of the principle of conservation of mass in the analysis of steady-state non-reacting chemical processes.

**Credits**

2

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)

## **CHE244 - INTRO TO CHEM ENGRG SYSTEMS**

### **Long Course Title**

INTRODUCTION TO CHEMICAL ENGINEERING SYSTEMS

### **Course Description**

Chemical engineers' impact on today's societal issues, team problem solving, communication skills, and the introduction of chemical process flow sheets. Application of the principle of conservation of mass and energy in the analysis of steady-state chemical processes. Topics in physical, chemical, and thermal property estimation.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CHE201 - INTRO CHEMICAL ENGR PROCESS (2)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)

## **CHE294 - NATURE & PROPERTIES OF MATLS**

### **Long Course Title**

NATURE & PROPERTIES OF MATERIALS

### **Course Description**

Introduction to the fundamental nature and properties of materials including bonding, composition, and phase diagrams. Composite materials and aspects of materials processing, including diffusion, nucleation, and transformation diagrams, will be presented.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH114 - GENERAL PHYSICS LAB I (1)

**CHE295 - NATURE & PROPERTIES MATLS LAB****Long Course Title**

NATURE & PROPERTIES MATERIALS LABORATORY

**Course Description**

Experiments include characterizing material structures, testing mechanical properties and mapping phase diagram boundaries. Emphasis on numerical and statistical analysis of the data. Written reports are required, and elements of materials design are presented.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - CHE294 - NATURE & PROPERTIES OF MATLS (3)

**CHE342 - TRANSPORT PHENOMENA****Long Course Title**

TRANSPORT PHENOMENA

**Course Description**

Fundamental aspects of heat and mass transfer and the use of these basic principles in solving problems in transport operations. Heat transfer with phase change. Diffusive and convective mass transfer with applications.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH351 - PHYS CHEM IN PRACTICE (3)
    - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MAE310 - FLUID MECHANICS I (3)

**CHE344 - CHEM ENGR THERMODYNAMICS****Long Course Title**

CHEMICAL ENGINEERING THERMODYNAMICS

**Course Description**

Thermodynamics of phase equilibria, chemical reactions and thermodynamic analysis of chemical processes, with emphasis on topics of special interest to chemical engineers.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH351 - PHYS CHEM IN PRACTICE (3)
  - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)



**CHE347 - QUANTITATIVE MODELING FOR CHE****Long Course Title**

QUANTITATIVE MODELING FOR CHEMICAL ENGINEERING

**Course Description**

Modeling and analysis of physical phenomena that arise in chemical engineering and an introduction to computer-aided design.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)

**CHE359 - INDEPENDENT STUDIES IN CHE****Long Course Title**

INDEPENDENT STUDIES IN CHEMICAL ENGINEERING

**Course Description**

Independent studies or research on a topic that requires the application of basic principles in chemical engineering. A written report, analytical or experimental analysis, and oral presentation will be required.

**Credits**

1 - 3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)
  - CHE294 - NATURE & PROPERTIES OF MATLS (3)

**CHE439 - UNIT OPERATIONS I****Long Course Title**

UNIT OPERATIONS I

**Course Description**

Experimental studies cover fluid mechanics and heat transfer in unit operations. Theoretical classes provide an introduction to engineering economy as well as standard laboratory practice, probability and statistical data analysis. Emphasis placed on written and oral laboratory report presentation techniques.

**Credits**

2

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CHE295 - NATURE & PROPERTIES MATLS LAB (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)

**CHE440 - UNIT OPERATIONS II****Long Course Title**

UNIT OPERATIONS II

**Course Description**

Experimental studies covering reaction kinetics, mass separation, biotechnology, and special material properties. Applications of laboratory practices, probability and statistical data analysis, and ethics in professional practice. Emphasis placed on technical communications.

**Credits**

2

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CHE439 - UNIT OPERATIONS I (2)
    - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CHE443 - TRANSPORT PROCESSES (3)

**CHE441 - CHEM KINETICS & REACTOR DESIGN****Long Course Title**

CHEMICAL KINETICS & REACTOR DESIGN

**Course Description**

Fundamental principles of chemical kinetics and chemical reactor engineering along with the design of both thermal and catalytic reactors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE344 - CHEM ENGR THERMODYNAMICS (3)
  - CHE347 - QUANTITATIVE MODELING FOR CHE (3)

**Cross-Listed Course**

CHE541 - CHEM KINETICS & REACTOR DESIGN

## **CHE443 - TRANSPORT PROCESSES**

### **Long Course Title**

TRANSPORT PROCESSES

### **Course Description**

Applications of heat and mass transfer phenomena. Fins and heat exchangers, single-stage separation (vapor-liquid, liquid-liquid, gas/liquid-solid) and cascade separation (extraction, absorption/stripping, distillation, membranes).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE342 - TRANSPORT PHENOMENA (3)
  - CHE344 - CHEM ENGR THERMODYNAMICS (3)
  - CHE347 - QUANTITATIVE MODELING FOR CHE (3)
  - MAE310 - FLUID MECHANICS I (3)

## **CHE445 - CHEMICAL PROCESS CONTROL**

### **Long Course Title**

CHEMICAL PROCESS CONTROL

### **Course Description**

Fundamental principles of chemical process control; control system design for chemical processes.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)
  - CHE446 - ANAL & DESIGN TRANSPORT EQUIP (3)

## **CHE446 - ANAL & DESIGN TRANSPORT EQUIP**

### **Long Course Title**

ANALYSIS & DESIGN: TRANSPORT EQUIPMENT

### **Course Description**

Theory of transport phenomena from a unified approach to momentum, heat and mass transfer. Application of theory to the design of various transport equipment.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CHE342 - TRANSPORT PHENOMENA (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CHE443 - TRANSPORT PROCESSES (3)

## **CHE448 - CHEMICAL ENGINEERING DESIGN**

### **Long Course Title**

CHEMICAL ENGINEERING DESIGN

### **Course Description**

Capstone design course. Design of chemical engineering components, concluding with an overall team design effort using modern CAD techniques includes preliminary design, simulation, and economic evaluation of a chemical production flow sheet, and a study of ethical issues.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Earn a minimum grade of C- in all of the following:
    - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)
    - CHE443 - TRANSPORT PROCESSES (3)
    - CHE446 - ANAL & DESIGN TRANSPORT EQUIP (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CHE445 - CHEMICAL PROCESS CONTROL (3)

## **CHE459 - ADVD INDEPENDENT STUD CHE**

### **Long Course Title**

ADVANCED INDEPENDENT STUDY - CHEMICAL ENGINEERING

### **Course Description**

Independent studies or research on a topic that requires a solid background in the foundations of chemical engineering. A written report, analytical or experimental analysis, and oral presentation will be required.

### **Credits**

1 - 3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CHE347 - QUANTITATIVE MODELING FOR CHE (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH440 - POLYMER SYNTHESIS & CHARACTERI (3)

**CHE460 - INTRO TO BIOPROCESS ENGR****Long Course Title**

INTRODUCTION TO BIOPROCESS ENGINEERING

**Course Description**

Application of engineering principles to analysis of and development and design of processes using biological catalysts including enzymes, plant and animal cells, and genetically engineered cells. Other topics include fermentation and biological mass transport processes.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH361 - GENERAL BIOCHEMISTRY (3)

**Cross-Listed Course**

CHE560 - INTRO TO BIOPROCESS ENGR

**CHE461 - BIOSEPARATIONS****Long Course Title**

BIOSEPARATIONS

**Course Description**

Characteristics of separation processes used in biotechnology industries including removal of insolubles, isolation and purification of thermally sensitive products, and preparation for customer use. Applications for biological separations, recombinant DNA techniques, and protein engineering.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE460 - INTRO TO BIOPROCESS ENGR (3)

**Cross-Listed Course**

CHE561 - BIOSEPARATIONS RECOMBI TECH/PR

**CHE485 - PROCESS SAFETY & TOXICOLOGY****Long Course Title**

PROCESS SAFETY & TOXICOLOGY

**Course Description**

Fundamentals of process safety and aspects of toxicology. Requires the application of chemical engineering concepts to review and analyze case studies to learn from industrial accidents. Introduces regulatory and design concepts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)
  - CHE443 - TRANSPORT PROCESSES (3)
  - CHE446 - ANAL & DESIGN TRANSPORT EQUIP (3)

**CHE494 - APPLIED MATERIALS ENGINEERING****Long Course Title**

APPLIED MATERIALS ENGINEERING

**Course Description**

Synthesis and processing methods of materials. Selection and use of materials performance factors for design of structural and functional components. Use of computational methods in solving open-ended design problems using nature and properties of materials will be emphasized.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE294 - NATURE & PROPERTIES OF MATLS (3)
  - CHE344 - CHEM ENGR THERMODYNAMICS (3)

**Cross-Listed Course**

CHE594 - APPLIED MATERIALS PROCESSING

**CHE495 - POLYMER ENGINEERING****Long Course Title**

POLYMER ENGINEERING

**Course Description**

Engineering principles of polymers and their role in manufacturing processes. Aspects of polymer phenomena and their relationship to processing of structural and functional components.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH351 - PHYS CHEM IN PRACTICE (3)
  - CH440 - POLYMER SYNTHESIS & CHARACTERI (3)

**Equivalent Course(s)**

CHE595 - ADV THERMODYNAMICS

**CHE541 - CHEM KINETICS & REACTOR DESIGN****Long Course Title**

CHEMICAL KINETICS & REACTOR DESIGN

**Course Description**

Fundamental principles of chemical kinetics and chemical reactor engineering along with the design of both thermal and catalytic reactors.

**Credits**

3

**Cross-Listed Course**

CHE441 - CHEM KINETICS & REACTOR DESIGN

**CHE549 - INTRO ENVIRONMENTAL ENGR****Long Course Title**

INTRODUCTION TO ENVIRONMENTAL ENGINEERING

**Course Description**

Engineering aspects of air, water, and thermal pollution. Hydrologic cycle, water sources and uses; industrial and other sources of primary and secondary pollutants. Transport process in environmental problems and in their control.

**Credits**

3

**Equivalent Course(s)**

CE549 - INTRO ENVIRONMENTAL ENGR

**CHE559 - SELECTED TOPICS/CHE****Long Course Title**

SELECTED TOPICS IN CHEMICAL ENGINEERING

**Course Description**

Discussion of biocompatible polymers and their application in drug delivery systems. Polymers of natural and synthetic origin will be studied, special emphasis will be placed upon the synthesis of biocompatible polymers. The formation of polymeric micelles, hydrogels, and liposomes will be studied. The process of extravasation as an uptake mechanism for polymeric delivery systems will be discussed. Reading material will be based on the latest publications in the field.

**Credits**

1 - 6

**CHE560 - INTRO TO BIOPROCESS ENGR****Long Course Title**

INTRODUCTION TO BIOPROCESS ENGINEERING

**Course Description**

Application of engineering principles to the analysis of and the development and design of processes using biological catalysts including enzymes, plant and animal cells, and genetically engineered cells. Other topics include fermentation and biological mass transport processes.

**Credits**

3

**Cross-Listed Course**

CHE460 - INTRO TO BIOPROCESS ENGR

**CHE561 - BIOSEPARATIONS RECOMBI TECH/PR****Long Course Title**

BIOSEPARATIONS RECOMBINANT TECHNIQUES/PROTEIN ENGINEERING

**Course Description**

General characteristics of separation processes used in the biotechnology industry, including removal of insolubles, isolation and purification of thermally sensitive products for final use by the customer. Application of unit operation principles for biological separations, recombinant DNA techniques, protein engineering.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE560 - INTRO TO BIOPROCESS ENGR (3)

**Equivalent Course(s)**

CHE461 - BIOSEPARATIONS



**CHE594 - APPLIED MATERIALS PROCESSING****Long Course Title**

APPLIED MATERIALS PROCESSING

**Course Description**

Synthesis and processing methods of materials for engineering applications. Selection and use of materials performance factors for design of structural and functional components. Use of computational methods in solving open-ended design problems that depend on an understanding of the nature and properties of materials will be emphasized. All classes of materials are covered.

**Credits**

3

**Cross-Listed Course**

CHE494 - APPLIED MATERIALS ENGINEERING

**CHE595 - ADV THERMODYNAMICS****Long Course Title**

ADVANCED THERMODYNAMICS

**Course Description**

Engineering principles of polymers and their role in manufacturing processes. Aspects of polymer phenomena and their relationship to processing of structural and functional components.

**Credits**

3

**Cross-Listed Course**

CHE495 - POLYMER ENGINEERING

**CHE641 - ADV THERMODYNAMICS****Long Course Title**

ADVANCED THERMODYNAMICS

**Course Description**

Application of classical thermodynamics. Treatment of problems involving nonideal gases and liquids, phase equilibrium, and chemical equilibrium.

**Credits**

3

**Equivalent Course(s)**

MAE641 - ADV THERMODYNAMICS

**CHE644 - INTRO ELECTROCHEM SYSTEM****Long Course Title**

INTRODUCTION TO ELECTROCHEMICAL SYSTEMS

**Course Description**

Thermodynamics, transport, and kinetics of electrodes and cells. Systems analysis of batteries, fuel cells, porous electrodes, electroplating, electrowinning, and corrosion processes. Convective diffusion at high Schmidt numbers.

**Credits**

3

**CHE646 - THERMODYNAMICS OF MATRLS****Long Course Title**

THERMODYNAMICS OF MATERIALS

**Course Description**

Fundamental thermodynamic review, phase equilibrium, chemical reaction equilibrium, free energy, binary and ternary phase transformations, solution models and selected topics.

**Credits**

3

**Equivalent Course(s)**

CH646 - THERMODYNAMICS OF MATRLS  
MTS646 - THERMODYNAMICS OF MATRLS

**CHE648 - TRANSPORT PHENOMENA I****Long Course Title**

TRANSPORT PHENOMENA I

**Course Description**

Introduction to transport phenomena, fluid and continuum mechanics. Exact solutions of the Navier-Stokes equation. Introduction to boundary-layer. Multiphase flows. Capillary flows.

**Credits**

3

**CHE649 - TRANSPORT PHENOMENA II****Long Course Title**

TRANSPORT PHENOMENA II

**Course Description**

Introduction to transport phenomena with emphasis on energy and mass transport. Equations of energy change. Free and forced convection. Equations of mass change. Ficks Law. The Stephan-Maxwell equations. Mass transport in multiphase systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE648 - TRANSPORT PHENOMENA I (3)

**Equivalent Course(s)**

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**CHE650 - PRINC LIQUID/SOLID INTER****Long Course Title**

PRINCIPLES OF LIQUID/SOLID INTERFACES

**Course Description**

Applies basic principles in thermodynamics and kinetics to characterize surfaces and surface phenomena. Reviews fundamental properties of gas-liquid, liquid-liquid, solid-liquid, and solid-gas interfaces and phenomena occurring at these interfaces.

**Credits**

3

**Equivalent Course(s)**

CH650 - PRINC LIQUID/SOLID INTER  
MTS650 - PRINC LIQUID/SOLID INTER

**CHE657 - ADVANCED PROCESS CONTROL****Long Course Title**

ADVANCED PROCESS CONTROL

**Course Description**

Application of modern control theory to chemical processes; multivariable control; estimation and adaptive control, optimal control.

**Credits**

3

**CHE658 - CATALYSIS/REACTOR DESIGN****Long Course Title**

CATALYSIS/REACTOR DESIGN

**Course Description**

Treatment of homogeneous and heterogeneous reaction kinetics, transport in fluid-solid reactions, catalyst deactivation and their effects on the analysis and design of chemical reactors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CHE541 - CHEM KINETICS & REACTOR DESIGN (3)

**CHE659 - SELECTED TOPICS/CHE****Long Course Title**

SELECTED TOPICS IN CHEMICAL ENGINEERING

**Credits**

1 - 6

**CHE696 - GRAD INTERNSHIP CHE ENGR****Long Course Title**

GRADUATE INTERNSHIP: CHEMICAL ENGINEERING

**Course Description**

Active involvement in an engineering project in an engineering enterprise, professional organization, or government agency that has particular interest and relevance to the graduate student. Permission of CHE faculty member required.

**Credits**

1 - 9

**CHE699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester in which a student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for M.S.E. students. A maximum of nine hours of credit is awarded upon successful completion of master's thesis. The 1 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 1 hour option once in their career.

**Credits**

0 - 9

**CHE759 - ADV SELECTED TOPICS IN CHE****Long Course Title**

ADVANCED SELECTED TOPICS IN CHEMICAL ENGINEERING

**Credits**

1 - 3

**CHE799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on doctoral dissertation.

**Credits**

0 - 9

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## Chemistry

**CH101 - INTRO TO CHEMISTRY****Long Course Title**

INTRODUCTION TO CHEMISTRY

**Course Description**

Properties of solids, liquids, gases, and solutions, atomic theory and bonding, concentration concepts, and physical and chemical properties of the more common elements and their compounds. No placement examination is required.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH105 - INTRO CHEMISTRY LAB (1)
  - Math Requirement
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
    - MA110S - FINITE MATHEMATICS S-SECTION (3)
    - MA110 - FINITE MATHEMATICS (3)

**Charger Foundations**

Area III: Natural (Lab) Science

**CH101R - RECITATION****Long Course Title**

RECITATION

**Course Description**

Complements material for CH 101

**Credits**

0

**CH105 - INTRO CHEMISTRY LAB****Long Course Title**

INTRO CHEMISTRY LAB

**Course Description**

Complements the lecture material for CH 101. Laboratory fundamentals and basic chemical principles.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH101 - INTRO TO CHEMISTRY (3)

**Charger Foundations**

Area III: Natural (Lab) Science

**CH121 - GENERAL CHEMISTRY I****Course Description**

Chemical properties of elements, their periodic groups, and their compounds. Reactions and stoichiometry. Nature of the chemical bond, molecular structure, thermochemistry. Properties of gases, liquids, and solids.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - MA171 - CALCULUS I (4)
  - MA171S - CALCULUS I S-SECTION (4)

**Equivalent Course(s)**

CH121M - GENERAL CHEMISTRY I M

**Charger Foundations**

Area III: Natural (Lab) Science

**CH121M - GENERAL CHEMISTRY I M****Long Course Title**

GENERAL CHEMISTRY FOR CHEMISTS

**Course Description**

For students that will continue to take Chemistry courses (ex. CH 123, CH 331, CH 332, etc..) following this course. This typically means a Chemistry major/minor, a Biology major, a Chemical Engineering major or a student interested in Pre-Professional Health. Chemical properties of elements and the Periodic Table. Reactions and stoichiometry. Nature of chemical bonds, molecular structure, thermochemistry. Properties of gases, liquids, and solids.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - CH125M - GENERAL CHEMISTRY LAB I M (1)

**Equivalent Course(s)**

CH121 - GENERAL CHEMISTRY I

**CH121R - RECITATION****Long Course Title**

RECITATION

**Course Description**

Complements material for CH 121

**Credits**

0

## **CH122 - GENERAL CHEMISTRY ENGINEERS**

### **Long Course Title**

GENERAL CHEMISTRY FOR ENGINEERING MAJORS

### **Course Description**

This course is designed as a one semester presentation of key aspects in general chemistry and is recommended for all engineering majors except chemical engineers. Covers topic on atoms and molecules: reactions and stoichiometry; gases; the periodic table; atomic structure, chemical bonding and molecular structure; materials; energy, entropy, and free energy; kinetics and equilibrium; and electrochemistry. Substitutes for CH 121 when transferred to any other curriculum.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSCHEE ENG
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)

### **Corequisites**

- Concurrently enrolled in:
  - CH125 - GENERAL CHEMISTRY LAB I (1)

## **CH123 - GENERAL CHEMISTRY II**

### **Long Course Title**

GENERAL CHEMISTRY II

### **Course Description**

Continuation of CH 121 with in-depth study of topics listed. To be taken concurrently with CH 126.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH121M - GENERAL CHEMISTRY I M (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH126 - GENERAL CHEMISTRY LAB II (1)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)

### **Charger Foundations**

Area III: Natural (Lab) Science



**CH123R - RECITATION****Long Course Title**

RECITATION

**Course Description**

Complements material for CH 123

**Credits**

0

**CH125 - GENERAL CHEMISTRY LAB I****Long Course Title**

GENERAL CHEMISTRY LABORATORY I

**Course Description**

Complements the lecture material for CH 121. Includes the determination of chemical and physical properties of materials, synthesis and characterization, and introduction to spectroscopy.

**Credits**

1

**Charger Foundations**

Area III: Natural (Lab) Science

**CH125M - GENERAL CHEMISTRY LAB I M****Long Course Title**

GENERAL CHEMISTRY 125M

**Course Description**

For students that will continue to take Chemistry courses (ex. CH 123, CH 331, CH 332, etc..) following this course. This typically means a Chemistry major, a Biology major, or a Chemical Engineering major. Complements the lecture material for CH 121M. Includes the determination of chemical and physical properties of materials, synthesis and characterization, and introduction to spectroscopy.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH121M - GENERAL CHEMISTRY I M (3)

**Equivalent Course(s)**

CH125 - GENERAL CHEMISTRY LAB I

**Charger Foundations**

Area III: Natural (Lab Science)

**CH126 - GENERAL CHEMISTRY LAB II****Long Course Title**

GENERAL CHEMISTRY LABORATORY II

**Course Description**

Complements the lecture material of CH 123. Includes an introduction to qualitative and quantitative analytical techniques.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH123 - GENERAL CHEMISTRY II (3)

**Charger Foundations**

Area III: Natural (Lab) Science

**CH151 - GENERAL, ORGANIC, BIOCHEMISTRY****Long Course Title**

GENERAL ORGANIC BIOCHEMISTRY

**Course Description**

Explore forms and behaviors of matter, composition of atoms with inorganic, nuclear, organic and biochemical reactions. Use bonding and nonbonding interactions to predict physical and chemical properties of atoms and compounds. Apply these concepts to nomenclature, reactivity, biological activity.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C+ or concurrently enrolled in at least 1 of the following:
  - MA112 - PRECALCULUS ALGEBRA (3)
  - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
  - MA110S - FINITE MATHEMATICS S-SECTION (3)
  - MA110 - FINITE MATHEMATICS (3)
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - MA171S - CALCULUS I S-SECTION (4)
  - MA171 - CALCULUS I (4)

**Corequisites**

- Concurrently enrolled in:
  - CH155 - GENORGBIOCHEM LAB (1)

**Charger Foundations**

Area III: Natural (Lab) Science

**CH155 - GENORGBIOCHEM LAB****Long Course Title**

INTRODUCTION TO GENERAL, ORGANIC AND BIOCHEMISTRY LABS

**Course Description**

Complements the lecture material for CH 151. Laboratory fundamentals and basic chemical principles. Introduction to laboratory safety, practices, equipment and principles. This will include exploration of chemical bonding, gas laws, preparation of solutions, organic and biochemical concepts such as carbohydrates, lipids, and protein synthesis.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)

**Charger Foundations**

Area III: Natural (Lab) Science

**CH191 - FUNDAMENTALS OF CHEMICAL RES****Long Course Title**

FUNDAMENTALS OF CHEMICAL RESEARCH

**Course Description**

Personalized programs to introduce beginning students to undergraduate research. Introduction to laboratory research techniques. Approval of supervising faculty member and chemistry chair required. Registration utilizes last digit of course number to designate semester-hour credit.

**Credits**

1

**CH192 - FUNDAMENTALS OF CHEMICAL RES****Long Course Title**

FUNDAMENTALS OF CHEMICAL RESEARCH

**Course Description**

Personalized programs to introduce beginning students to undergraduate research. Introduction to laboratory research techniques. Approval of supervising faculty member and chemistry chair required. Registration utilizes last digit of course number to designate semester-hour credit.

**Credits**

2

**CH193 - FUNDAMENTALS OF CHEMICAL RES****Long Course Title**

FUNDAMENTALS OF CHEMICAL RESEARCH

**Course Description**

Personalized programs to introduce beginning students to undergraduate research. Introduction to laboratory research techniques. Approval of supervising faculty member and chemistry chair required. Registration utilizes last digit of course number to designate semester-hour credit.

**Credits**

3

**CH201 - ELEM ORGANIC CHEMISTRY****Long Course Title**

ELEMENTARY ORGANIC CHEMISTRY

**Course Description**

Survey of nomenclature, structure, functional groups, properties and reactions of organic compounds.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH205 - ELEM ORGANIC CHEMISTRY LAB (1)
  - Chemistry Requirement
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
    - Earn a minimum grade of C- in all of the following:
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)

**CH205 - ELEM ORGANIC CHEMISTRY LAB****Long Course Title**

ELEMENTARY ORGANIC CHEMISTRY LABORATORY

**Course Description**

Laboratory component of CH 201. Includes reactions of organic compounds and functional group modifications.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH201 - ELEM ORGANIC CHEMISTRY (3)
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
    - Earn a minimum grade of C- in all of the following:
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)

**CH223 - QUANTITATIVE ANALYSIS****Long Course Title**

QUANTITATIVE ANALYSIS

**Course Description**

Introduction to quantitative analytical chemistry including instrumentation. Data treatment, ionic equilibria, elementary electrochemical, spectrochemical, gravimetric, and volumetric techniques.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH126 - GENERAL CHEMISTRY LAB II (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)

**CH224 - QUANTITATIVE ANALYSIS LAB****Long Course Title**

QUANTITATIVE ANALYSIS LABORATORY

**Course Description**

Introduction to quantitative analytical chemistry laboratory. Experiments include pH measurements, spectrochemical, gravimetric, and volumetric titrations.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH126 - GENERAL CHEMISTRY LAB II (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH223 - QUANTITATIVE ANALYSIS (3)

**CH301 - ELEMENTARY BIOCHEMISTRY****Long Course Title**

ELEMENTARY BIOCHEMISTRY

**Course Description**

Survey of structure and function of carbohydrates, lipids, proteins and nucleic acids. Enzyme properties and functions. Major metabolic pathways, interactions, and regulation. No credit given to chemistry majors or minors. Credit in CH 361 precludes credit in CH 301.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH201 - ELEM ORGANIC CHEMISTRY (3)
    - CH331 - ORGANIC CHEMISTRY I (3)

**Equivalent Course(s)**

BYS301 - ELEMENTARY BIOCHEMISTRY

**CH331 - ORGANIC CHEMISTRY I****Long Course Title**

ORGANIC CHEMISTRY I

**Course Description**

Lecture/Lab includes one two-hour recitation per week. Chemistry of organic compounds. Synthetic methods, theory, and reaction mechanisms.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH123 - GENERAL CHEMISTRY II (3)

**CH331R - ORGANIC CHEM I RECITATION****Long Course Title**

ORGANIC CHEMISTRY I RECITATION

**Course Description**

To be taken as a co-requisite with CH 331. Organic chemistry problem solving, including nomenclature, reactions, mechanisms, spectroscopy, and test-taking strategy.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CH331 - ORGANIC CHEMISTRY I (3)

**CH332 - ORGANIC CHEMISTRY II****Long Course Title**

ORGANIC CHEMISTRY II

**Course Description**

Lecture/Lab Includes one two-hour recitation per week. Continuation of CH 331.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH331 - ORGANIC CHEMISTRY I (3)

**CH332R - ORGANIC CHEM II RECITATION****Long Course Title**

ORGANIC CHEMISTRY II RECITATION

**Course Description**

To be taken as a co-requisite with CH 332. Organic chemistry problem solving, including nomenclature, reactions, mechanisms, spectroscopy, and test-taking strategy.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CH332 - ORGANIC CHEMISTRY II (3)

**CH335 - ORGANIC CHEMISTRY LAB I****Long Course Title**

ORGANIC CHEMISTRY LABORATORY I

**Course Description**

Techniques of organic chemistry including synthesis, separation, and identification of organic compounds with use of chemical and spectroscopic methods.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH126 - GENERAL CHEMISTRY LAB II (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH331 - ORGANIC CHEMISTRY I (3)

**CH336 - ORGANIC CHEMISTRY LAB II****Long Course Title**

ORGANIC CHEMISTRY LABORATORY II

**Course Description**

Continuation of CH 335.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH332 - ORGANIC CHEMISTRY II (3)



**CH337 - ADVANCED CHEMISTRY LAB****Long Course Title**

ADVANCED CHEMISTRY LABORATORY

**Course Description**

Advanced chemistry laboratory introducing reactions and techniques not covered in any previous Chemistry laboratory; this may include Organic, Biochemistry, Physical Chemistry, Analytical Chemistry, Polymer Chemistry or Inorganic Chemistry. Pursuit of a special open-ended problem by each student.

**Credits**

2

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
  - Instructor Permission

**CH341 - PHYSICAL CHEMISTRY I****Long Course Title**

PHYSICAL CHEMISTRY I

**Course Description**

An introduction to physical chemistry encompassing: the kinetic theory of gases, the laws of thermodynamics, chemical equilibrium, phase equilibria, electrolyte solutions, electrochemistry and elementary theories of statistical thermodynamics. Credit in CH 341 precludes credit in CH 347.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH123 - GENERAL CHEMISTRY II (3)
  - MA201 - CALCULUS III (4)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

**CH342 - PHYSICAL CHEMISTRY II****Long Course Title**

PHYSICAL CHEMISTRY II

**Course Description**

A survey of additional fundamental concepts of physical chemistry including: chemical kinetics, quantum chemistry, atomic structure, group theory, spectroscopy (i.e. IR, Raman, NMR, EMR, etc.), and surface and colloid chemistry. Credit in 342 precludes credit in CH 348.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH341 - PHYSICAL CHEMISTRY I (3)

**CH343 - INTRO TO QUANTUM CHEM****Long Course Title**

INTRODUCTION TO QUANTUM CHEMISTRY

**Course Description**

Quantum mechanical treatment of atoms, molecules, and spectroscopy.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH341 - PHYSICAL CHEMISTRY I (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)

**CH345 - EXPERIMENTAL PHYSICAL CHEM I****Long Course Title**

EXPERIMENTAL PHYSICAL CHEMISTRY I

**Course Description**

Laboratory and computer investigation into topics covered in physical chemistry CH 341. Includes thermodynamics, chemical equilibria and electrochemistry. The lab involves report writing, data and error analysis, error propagation and linear and nonlinear regression using appropriate software.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)

## **CH346 - EXPERIMENTAL PHYSICAL CHEM II**

### **Long Course Title**

EXPERIMENTAL PHYSICAL CHEMISTRY II

### **Course Description**

Laboratory and computer investigations into topics covered in physical chemistry CH 342. Includes kinetics, quantum mechanics and spectroscopy. The lab involves report writing, data and error analysis, error propagation and linear and nonlinear regression using appropriate software.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH348 - BIOPHYSICAL CHEMISTRY II (3)

## **CH347 - BIOPHYSICAL CHEMISTRY I**

### **Long Course Title**

BIOPHYSICAL CHEMISTRY I

### **Course Description**

Computers for data analysis and simulations. First and second laws of thermodynamics. Free energy and equilibrium. Calorimetry. Protein stability. Binding and Interactions. Solution thermodynamics. Electrolytes. Electrochemistry. Biochemical reaction kinetics. Enzyme catalysis.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH332 - ORGANIC CHEMISTRY II (3)
  - MA172 - CALCULUS II (4)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

### **Equivalent Course(s)**

BYS347 - BIOPHYSICAL CHEMISTRY I

**CH348 - BIOPHYSICAL CHEMISTRY II****Long Course Title**

BIOPHYSICAL CHEMISTRY II

**Course Description**

Quantum mechanics. Statistical thermodynamics. Spectroscopy, including UV-VIS, Fluorescence. Circular dichroism, NMR. Structure determinations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH347 - BIOPHYSICAL CHEMISTRY I (3)

**Equivalent Course(s)**

BYS348 - BIOPHYSICAL CHEMISTRY II

**CH351 - PHYS CHEM IN PRACTICE****Long Course Title**

PHYSICAL CHEMISTRY IN PRACTICE

**Course Description**

Fundamental concepts and principles from chemical thermodynamics and reaction dynamics in practice. States of matter; energy and entropy; thermodynamic laws; chemical and phase equilibria; mixtures; and reaction rates, kinetics, and mechanisms. Derivations and computer applications of formula. Restricted to Chemical Engineering major only.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: BSCHEE ENG
  - Earn a minimum grade of C- in all of the following:
    - CH123 - GENERAL CHEMISTRY II (3)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - MA201 - CALCULUS III (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CHE201 - INTRO CHEMICAL ENGR PROCESS (2)
    - PH112 - GEN PHYSICS W/CALC II (3)

## **CH361 - GENERAL BIOCHEMISTRY**

### **Long Course Title**

GENERAL BIOCHEMISTRY I

### **Course Description**

Nomenclature, structure, function, properties, and metabolism of amino acids, carbohydrates, lipids, and nucleic acids. Enzyme function, major catabolic pathways, their interrelations and control mechanisms. Glycolysis, Citric Acid Cycle, and oxidative phosphorylation.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS311 - INTRO MOLECULAR UNDSST BIO SYST (3)
  - Earn a minimum grade of C- in all of the following:
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CHE201 - INTRO CHEMICAL ENGR PROCESS (2)

### **Equivalent Course(s)**

BYS361 - GENERAL BIOCHEMISTRY

## **CH362 - GENERAL BIOCHEMISTRY LAB**

### **Long Course Title**

GENERAL BIOCHEMISTRY LABORATORY

### **Course Description**

Lecture/Lab One 3-hour lab a week. Practical experience in isolation, qualitative identification, and quantitative estimation of biomolecules.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - BYS361 - GENERAL BIOCHEMISTRY (3)
    - CH361 - GENERAL BIOCHEMISTRY (3)

### **Equivalent Course(s)**

BYS362 - GENERAL BIOCHEMISTRY LAB

**CH363 - GEN BIOCHEMISTRY II****Long Course Title**

GENERAL BIOCHEMISTRY II

**Course Description**

A continuation of CH 361 to include fatty acid and amino acid oxidation, enzymatic synthesis of biomolecules, integration of metabolic processes, DNA and RNA metabolism including replication and transcription, translation and protein synthesis, and regulation of gene expression.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH361 - GENERAL BIOCHEMISTRY (3)

**Equivalent Course(s)**

BYS363 - GENERAL BIOCHEMISTRY II

**CH364 - GEN BIOCHEMISTRY LAB II****Long Course Title**

GENERAL BIOCHEMISTRY LAB II

**Course Description**

Experimental course illustrating the topics in CH 363.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH363 - GEN BIOCHEMISTRY II (3)

**Equivalent Course(s)**

BYS365 - GENERAL BIOCHEMISTRY LAB II

**CH401 - INORGANIC CHEMISTRY****Long Course Title**

INORGANIC CHEMISTRY

**Course Description**

Fundamental topics in inorganic chemistry. Atomic structure, chemical bonding, symmetry, acid-base theories, non-aqueous solvents, coordination chemistry, crystal field and ligand field theory, main group and transition metal chemistry, organometallics, catalysis, and bioinorganic chemistry.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH332 - ORGANIC CHEMISTRY II (3)

**CH402 - INORGANIC CHEMISTRY LAB****Long Course Title**

INORGANIC CHEMISTRY LABORATORY

**Course Description**

Laboratory techniques of inorganic chemistry including synthesis, purification, isolation, and identification of inorganic compounds.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH401 - INORGANIC CHEMISTRY (3)

**CH421 - INSTRUMENTAL ANALYSIS****Long Course Title**

INSTRUMENTAL ANALYSIS

**Course Description**

Introduction to modern analytical instrumentation including IR, UV and atomic absorption spectrophotometers, nuclear magnetic resonance, electroanalytical equipment, and gas and liquid chromatographs. Lecture and laboratory.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)
    - CH341 - PHYSICAL CHEMISTRY I (3)

**Cross-Listed Course**

CH521 - CHEMICAL INSTRUMENTATION

**CH422 - INSTRUMENTAL ANALYSIS LAB****Long Course Title**

INSTRUMENTAL ANALYSIS LABORATORY

**Course Description**

Complements the lecture material for CH 421. Introduction to modern analytical instrumentation including IR, UV and atomic absorption spectrophotometers, nuclear magnetic resonance, electroanalytical equipment, and gas and liquid chromatographs.

**Credits**

1

**CH435 - CHEMICAL TOXICOLOGY****Long Course Title**

CHEMICAL TOXICOLOGY

**Course Description**

An introduction to the principles of chemical toxicology, including the effects of drugs, environmental pollutants, natural toxins and venoms, and other potentially hazardous chemicals, at the physiological, cellular, and molecular level.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH332 - ORGANIC CHEMISTRY II (3)
  - CH361 - GENERAL BIOCHEMISTRY (3)



**CH440 - POLYMER SYNTHESIS & CHARACTERI****Long Course Title**

POLYMER SYNTHESIS & CHARACTERIZATION

**Course Description**

Synthesis of commercially relevant and novel polymers. Polymer characteristics and a discussion of the structural dependence of polymer properties. Course completion and/or grade requirements for undergraduate credit will differ from those for graduate credit.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH332 - ORGANIC CHEMISTRY II (3)

**CH480 - SELECTED TOPICS IN CHEM****Long Course Title**

SELECTED TOPICS IN CHEMISTRY

**Course Description**

Special offerings to students in areas of interest not covered in present curriculum.

**Credits**

1 - 3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Instructor Permission

**CH491 - INTRO TO CHEMICAL RESEARCH****Long Course Title**

INTRODUCTION TO CHEMICAL RESEARCH

**Course Description**

Personalized programs to round out the undergraduate curriculum of students with various goals. Registration utilizes last digit of course number to designate semester hour credit. Student normally may elect only up to 6 hours.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Instructor and Department Chair Permission

**CH492 - INTRO TO CHEMICAL RESEARCH****Long Course Title**

INTRODUCTION TO CHEMICAL RESEARCH

**Course Description**

Personalized programs to round out the undergraduate curriculum of students with various goals. Registration utilizes last digit of course number to designate semester hour credit. Student normally may elect only up to 6 hours.

**Credits**

2

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
  - Must have a class standing of Senior
  - Instructor and Department Chair Permission

**CH493 - INTRO TO CHEMICAL RESEARCH****Long Course Title**

INTRODUCTION TO CHEMICAL RESEARCH

**Course Description**

Personalized programs to round out the undergraduate curriculum of students with various goals. Registration utilizes last digit of course number to designate semester hour credit. Student normally may elect only up to 6 hours.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
  - Must have a class standing of Senior
  - Instructor and Department Chair Permission

**CH500 - TOPICS IN CHEMISTRY****Long Course Title**

TOPICS IN CHEMISTRY

**Course Description**

Advanced laboratory research in one of the departmental research groups. The student works on an independent or group research project. Completion of the course requires an appropriate written and oral report.

**Credits**

1 - 3

**Prerequisites**

- Instructor Permission

**CH521 - CHEMICAL INSTRUMENTATION****Long Course Title**

CHEMICAL INSTRUMENTATION

**Course Description**

Use of basic instrumentation in NMR, mass spectrometric, chromatographic, and spectrophotometric analysis.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH522 - CHEMICAL INSTRUMENTATION LAB (1)

**Equivalent Course(s)****Cross-Listed Course**

CH421 - INSTRUMENTAL ANALYSIS

**CH522 - CHEMICAL INSTRUMENTATION LAB****Long Course Title**

CHEMICAL INSTRUMENTATION LABORATORY

**Course Description**

Complements the lecture material for CH 521. Introduction to modern analytical instrumentation including IR, UV and atomic absorption spectrophotometers, nuclear magnetic resonance, electroanalytical equipment, and gas and liquid chromatographs.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CH521 - CHEMICAL INSTRUMENTATION (3)

**CH549 - SPECTROSCOPY & MOLEC STR****Long Course Title**

SPECTROSCOPY & MOLECULAR STRUCTURE

**Course Description**

Intermediate level treatment of principles of spectroscopy and their application to determination of molecular structure.

**Credits**

3

**CH553 - INTRO QUANTUM MECH I****Long Course Title**

INTRODUCTION TO QUANTUM MECHANICS I

**Course Description**

Waves and particles; Bohr's model; de Broglie waves, wave-packets, uncertainty principle; quantum mechanics postulates; Schroedinger equation; systems in 1, 2 & 3 dimensions; hydrogen atom.

**Credits**

3

**Equivalent Course(s)**

MTS651 - INTRO QUANTUM MECH I  
OSE555 - INTRO QUANTUM MECHANICS I  
PH551 - QUANTUM MECHANICS I

**CH554 - INTRO QUANTUM MECH II****Long Course Title**

INTRODUCTION TO QUANTUM MECHANICS II

**Course Description**

Angular momentum and spin; atomic structure and spectrum; time-independent perturbation theory, variational methods; time-dependent perturbation theory and interactions of light with matter; scattering theory; electronic structure of solids; relativistic quantum mechanics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CH553 - INTRO QUANTUM MECH I (3)
  - PH551 - QUANTUM MECHANICS I (3)

**Equivalent Course(s)**

MTS652 - INTRO QUANTUM MECH II

**CH561 - BIOCHEMISTRY I****Long Course Title**

BIOCHEMISTRY I

**Course Description**

Structural chemistry and function of biomolecules, mechanisms of biochemical reactions, enzyme kinetics, and energy transfer.

**Credits**

3

**Equivalent Course(s)**

BYS547 - BIOCHEMISTRY I

**CH562 - BIOCHEMISTRY II****Long Course Title**

BIOCHEMISTRY II

**Course Description**

Metabolism, biosynthesis of macromolecular precursors, storage, transmission, and expression of genetic information, and molecular physiology.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - BYS547 - BIOCHEMISTRY I (3)
  - CH561 - BIOCHEMISTRY I (3)

**Equivalent Course(s)**

BYS548 - BIOCHEMISTRY II

**CH600 - ADV INORGANIC CHEMISTRY****Long Course Title**

ADVANCED INORGANIC CHEMISTRY

**Course Description**

Survey with emphasis on structure and reactivity of inorganic compounds.

**Credits**

3

**CH602 - CHEM COORD COMPOUNDS****Long Course Title**

CHEMISTRY OF COORDINATION COMPOUNDS

**Course Description**

Modern bonding theory and stereochemistry of coordination compounds.

**Credits**

3

**CH621 - METHODS OF CHEMICAL ANALYSIS****Long Course Title**

METHODS OF CHEMICAL ANALYSIS

**Course Description**

Literature, seminar course. Theory and methodology of various techniques of chemical analysis.

**Credits**

3

**CH631 - SYNTHETIC ORGANIC CHEMISTRY****Long Course Title**

SYNTHETIC ORGANIC CHEMISTRY

**Course Description**

Survey of certain reactions that enjoy widespread application to the synthesis of organic compounds.

**Credits**

3

**CH632 - PHYSICAL ORGANIC CHEMISTRY****Long Course Title**

PHYSICAL ORGANIC CHEMISTRY

**Course Description**

Reactive intermediates, structure-activity relationships, reaction mechanisms and techniques used to determine them.

**Credits**

3

**CH633 - ORGANIC STRUCTURE DETERMINAT'N****Long Course Title**

ORGANIC STRUCTURE DETERMINATION

**Course Description**

Structure determination of organic molecules using spectroscopic methods, especially NMR, IR, and MS. Emphasis on the theory and interpretation of many NMR methods useful in chemistry research.

**Credits**

3

**CH634 - MOLECULAR MODELING****Long Course Title**

MOLECULAR MODELING

**Course Description**

Molecular modeling methods, such as molecular mechanics, molecular docking, molecular orbital theory, and density functional theory, will be used to investigate conformational properties of organic compounds, molecular interactions between biological macromolecules and organic ligands, electronic structure of organic and inorganic compounds, frontier molecular orbitals, pericyclic reactions, and reactive intermediates. Extensive computational laboratory work included.

**Credits**

4

**CH635 - CHEMICAL TOXICOLOGY****Long Course Title**

CHEMICAL TOXICOLOGY

**Course Description**

An introduction to the principles of chemical toxicology, including the effects of drugs, environmental pollutants, natural toxins and venoms, and other potentially hazardous chemicals at the physiological, cellular, and molecular level.

**Credits**

3

**CH640 - ADV CHEMICAL THERMODYNAMICS****Long Course Title**

ADVANCED CHEMICAL THERMODYNAMICS

**Course Description**

First, second, and third laws of thermodynamics. Thermodynamic functions. Applications to thermal properties of gases, liquids, solids, and solutions. Chemical reactions, phase transitions, and electrochemistry.

**Credits**

3

**CH641 - STATIST THERMODYNAMICS****Long Course Title**

STATISTICAL THERMODYNAMICS

**Course Description**

Principles leading to the development of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics. Thermodynamic properties calculated from partition functions.

**Credits**

3

**CH642 - ADV CHEMICAL DYNAMICS****Long Course Title**

ADVANCED CHEMICAL DYNAMICS

**Course Description**

Non-equilibrium thermodynamics, macroscopic and microscopic theories of diffusion, chemical reaction rate laws and mechanisms, transition state theory, gas phase molecular dynamics, electrical conduction in electrolyte solutions, electrode kinetics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH640 - ADV CHEMICAL THERMODYNAMICS (3)

**CH643 - QUANTUM CHEMISTRY****Long Course Title**

QUANTUM CHEMISTRY

**Course Description**

Application of quantum theory to the chemical bond.

**Credits**

3

**CH644 - CHEM ELECTRODYNAMICS****Long Course Title**

CHEMICAL ELECTRODYNAMICS

**Course Description**

Maxwell's equations applied to electrodynamic problems in chemistry. Theory of dielectrics, dipole moments, Beer's law, Landolt's rule, light scattering, magnetic properties, quantum theory of radiation.

**Credits**

3

**CH645 - POLYMER PHYSICAL CHEMISTRY****Long Course Title**

POLYMER PHYSICAL CHEMISTRY

**Course Description**

Introduction to structure, properties and processing of polymers. Physical behavior of polymers, structure-property relationships, polymer characterization, thermodynamics of polymer solutions and melts, mechanical evaluation of polymers.

**Credits**

3

**Equivalent Course(s)**

MTS747 - POLYMER PHYSICAL CHEM

**CH646 - THERMODYNAMICS OF MATRLS****Long Course Title**

THERMODYNAMICS OF MATERIALS

**Course Description**

Fundamental thermodynamic review, phase equilibrium, chemical reaction equilibrium, free energy, binary and ternary phase transformations, solution models and selected topics

**Credits**

3

**Equivalent Course(s)**

CHE646 - THERMODYNAMICS OF MATRLS  
MTS646 - THERMODYNAMICS OF MATRLS



**CH647 - ADV BIOPHYSICAL CHEMISTRY I****Long Course Title**

ADVANCED BIOPHYSICAL CHEMISTRY I

**Course Description**

Topics include: computer data analysis and simulation, first and second laws of thermodynamics, free energy and equilibrium, calorimetry, protein stability, binding and interactions, solution thermodynamics, electrolytes.

**Credits**

3

**CH648 - ADV BIOPHYSICAL CHEMISTRY II****Long Course Title**

ADVANCED BIOPHYSICAL CHEMISTRY II

**Course Description**

Advanced biophysical chemistry, including biochemical reaction kinetics, enzyme catalysis, quantum mechanics, statistical thermodynamics, spectroscopy, including UV-VIS, fluorescence, circular dichroism, NMR, and Structure determinations. An emphasis is placed on the current research literature.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH647 - ADV BIOPHYSICAL CHEMISTRY I (3)

**CH649 - POLYMER SYNTHESIS & CHARACTERI****Long Course Title**

POLYMER SYNTHESIS & CHARACTERIZATION

**Credits**

3

**Equivalent Course(s)**

MTS649 - POLYMER SYNTHESIS & CHARACTERI

**CH650 - PRINC LIQUID/SOLID INTER****Long Course Title**

PRINCIPLES OF THE LIQUID/SOLID INTERFACE

**Course Description**

Applies principles in thermodynamics & kinetics to characterize surfaces & surface phenomena. Fundamental properties of gas-liquid, liquid-liquid, solid-liquid and solid-gas interfaces and phenomena at these interfaces.

**Credits**

3

**Equivalent Course(s)**

CHE650 - PRINC LIQUID/SOLID INTER  
MTS650 - PRINC LIQUID/SOLID INTER

**CH699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester a student is enrolled and receiving direction on a masters thesis. Minimum of two terms is required. (A maximum of six hours may be applied towards the degree).

**Credits**

0 - 6

**CH700 - CURRENT TOPICS IN CHEMISTRY****Long Course Title**

CURRENT TOPICS IN CHEMISTRY

**Course Description**

Advanced laboratory research in one of the departmental research groups. The student works on an independent or group research project. Completion of the course requires a written and an oral report.

**Credits**

1 - 3

**Prerequisites**

- Instructor Permission

**CH705 - SEL TOP IN INORGANIC CHEM****Long Course Title**

SELECTED TOPICS IN INORGANIC CHEMISTRY

**Course Description**

Selected topics as chosen by the department.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH600 - ADV INORGANIC CHEMISTRY (3)
  - Instructor Permission

**CH721 - SP TOP IN ANALYTICAL CHEMISTRY****Long Course Title**

SELECTED TOPICS IN ANALYTICAL CHEMISTRY

**Course Description**

Selected topics as chosen by the department.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of B- in all of the following:
    - CH621 - METHODS OF CHEMICAL ANALYSIS (3)
  - Instructor Permission

**CH735 - SEL TOP IN ORGANIC CHEM****Long Course Title**

SELECTED TOPICS IN ORGANIC CHEMISTRY

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CH632 - PHYSICAL ORGANIC CHEMISTRY (3)
  - Instructor Permission

**CH745 - SEL TOP IN PHYSICAL CHEM****Long Course Title**

SELECTED TOPICS IN PHYSICAL CHEMISTRY

**Credits**

3

**CH746 - SOLID STATE CHEMISTRY****Long Course Title**

SOLID STATE CHEMISTRY

**Course Description**

Chemical properties of solids. Includes phase equilibria, chemical bonding in ionic and covalent crystals, thermodynamics of atomic defects, ionic conductivity in solids, corrosion, & introduction to surfaces and adsorption.

**Credits**

3

**CH765 - SEL TOPICS IN BIOCHEM****Long Course Title**

SELECTED TOPICS IN BIOCHEMISTRY

**Credits**

3

**Prerequisites**

- Instructor Permission

**CH780 - CHEMISTRY SEMINAR****Long Course Title**

CHEMISTRY SEMINAR

**Course Description**

Required during each semester of residence.

**Credits**

1

**Equivalent Course(s)**

MTS780 - MATERIALS SCIENCE SEMINAR

**CH799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Credits**

0 - 9

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## **Child, Family & Community Development**

**CFC305 - FAMILY, SCHOOLS & COMMUNITY****Long Course Title**

COLLABORATING WITH FAMILIES, SCHOOLS, AND COMMUNITIES

**Course Description**

This course highlights principles and practices of building effective collaborations with families; community agencies and schools with an emphasis on supporting families from diverse backgrounds (e.g. disability, culture/linguistic diversity; non-traditional family configurations, poverty, health problems; family dysfunction).

**Credits**

3

**CFC325 - POSITIVE YOUTH DEVELOPMENT****Long Course Title**

POSITIVE YOUTH DEVELOPMENT

**Course Description**

This course provides an overview of youth development principles and practices that serve as a theoretical and practical framework for building quality programs that aim to develop young people. Content includes an overview of youth development, building cultural competence and methods of empowering youth to become active community members.

**Credits**

3

**CFC335 - CRITICAL ISSUES COMMUNITY****Long Course Title**

CRITICAL ISSUES AT THE COMMUNITY LEVEL

**Course Description**

This course examines adolescents coming to age within communities in the context of society. Students will examine topics of mental health, stress and anxiety, suicide and drug use, family dynamics and how they are influenced through the community, the school's role in the development of a child, and growing up in today's world. Additionally, students will develop strategic plans to create and implement policy as well as to make policy changes, as necessary.

**Credits**

3

**CFC451 - LEADERSHIP YOUTH & COMMUNITY****Long Course Title**

LEADERSHIP IN YOUTH AND COMMUNITY DEVELOPMENT

**Course Description**

This course prepares students to assume leadership positions in youth and community development programs (e.g., early care and education programs; public, private, and nonprofit sectors) through coursework and a service learning opportunity. Principles and practices for effectively managing programs will be discussed.

**Credits**

3

**CFC460 - PROG in REC/LEIS****Long Course Title**

PROGRAMMING IN RECREATION AND LEISURE

**Course Description**

This course explores the "how" to improve a community's quality of life through building meaningful curriculum for a host of activities from recreational youth sport to active aging programs for seniors. Upon completion of this course, students will better understand the extent of recreational offerings and be able to plan quality activities for all potential recreational participants in all age ranges.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CFC305 - FAMILY, SCHOOLS & COMMUNITY (3)

**CFC461 - REC ADMIN****Long Course Title**

RECREATION ADMINISTRATION

**Course Description**

Recreation Administration - All recreation programs are faced with challenges that must be navigated through the proper channels. This course discusses the procedures, practices, and policies applicable to the recreational administration. Included in this course are topics such as legislation, tort law, budgets, record keeping, public relations, and personnel decisions.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)

**CFC495 - ELFR INTERNSHIP****Long Course Title**

EARLY LEARNING AND FAMILY RELATIONS INTERNSHIP

**Course Description**

Early Learning and Family Relations Internship - This capstone internship experience is designed to provide on-site practical experience in a non-profit organization, child care facility or pre-school. The student will be guided by a faculty member and on-site supervisor to achieve a strong overall work experience that pertains to the student's specific interests.

**Credits**

6

**Prerequisites**

- Must have a class standing of Senior

**CFC496 - RCL INTERNSHIP****Long Course Title**

RECREATION AND COMMUNITY LEADERSHIP INTERNSHIP

**Course Description**

This capstone internship experience is designed to provide on-site practical experience in a child care facility or pre-school. The student will be guided by a faculty member and an on-site supervisor to achieve a strong overall work experience that pertains to the student's specific interests.

**Credits**

6

**Prerequisites**

- Must have a class standing of Senior

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## Civil Engineering

**CE211 - CIVIL ENGINEERING GRAPHICS****Long Course Title**

CIVIL ENGINEERING GRAPHICS

**Course Description**

Fundamental concepts in computer-aided graphics as they apply to civil engineering. Topics include lettering, sketching, manipulation of elements, rotation of views and input of data. Students will gain engineering practice through AutoCad laboratory exercises.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EGR101 - INTRO COMPUTING ENGINEERS (3)

**CE271 - STATICS**  
**Long Course Title**

STATICS

**Course Description**

Topics include: forces, resultant forces, moments, couples, equivalent forces systems, equilibrium, distributed loads, two force members, trusses, centroids, moments of inertia, shear and bending moment diagrams, static and kinematic friction.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)

**Equivalent Course(s)**

MAE271 - STATICS

**CE272 - DYNAMICS**  
**Long Course Title**

DYNAMICS

**Course Description**

Kinematics and kinetics of a particle and systems of particles with applications to central force motion, impact, relative motion, vibrations, and variable mass systems. Dynamics of rigid body in plane motion, relative motion in rotating coordinates, and gyroscopic motion.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE271 - STATICS (3)
    - MAE271 - STATICS (3)

**Equivalent Course(s)**

MAE272 - DYNAMICS



**CE284 - SURVEYING****Long Course Title**

SURVEYING

**Course Description**

Basic theory and practical field methods for engineering applications. Measurements and errors in surveying. Leveling, traversing, stadia, topographic surveys, mapping, and circular curves. 1.5 hour lecture and 2 hour lab.

**Credits**

2

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CE211 - CIVIL ENGINEERING GRAPHICS (2)

**Corequisites**

- Concurrently enrolled in:
  - CE284L - SURVEYING LAB

**CE284L - SURVEYING LAB****Long Course Title**

SURVEYING LAB

**Course Description**

Lab component of CE 284

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CE284 - SURVEYING (2)

**CE321 - INTRO TO TRANSPORTATION ENG****Long Course Title**

INTRODUCTION TO TRANSPORTATION ENGINEERING

**Course Description**

Theory, design, and operation of various modes of transportation with emphasis on traffic flow.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CE284 - SURVEYING (2)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)

## **CE370 - MECHANICS OF MATERIALS**

### **Long Course Title**

MECHANICS OF MATERIALS

### **Course Description**

Design and analysis of simple structures for predetermined strength and deformation requirements. Topics include: theory of stress-strain, Hooke's Law, analysis of stresses and deformations in bodies loaded by axial, torsional, bending, and combined loads, and analysis of statically indeterminate systems.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE211 - CIVIL ENGINEERING GRAPHICS (2)
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE271 - STATICS (3)
    - MAE271 - STATICS (3)
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)

### **Corequisites**

- Concurrently enrolled in:
  - CE375 - MECHANICS OF MATERIALS LAB (1)

### **Equivalent Course(s)**

MAE370 - MECHANICS OF MATERIALS

## **CE370L - MECHANICS OF MATERIALS LAB**

### **Long Course Title**

MECHANICS OF MATERIALS LABORATORY

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - CE370 - MECHANICS OF MATERIALS (3)

### **Equivalent Course(s)**

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**CE372 - SOIL MECHANICS & FOUNDATION****Long Course Title**

SOIL MECHANICS & FOUNDATION

**Course Description**

Index properties and characteristics of soils. Compaction shear, compressibility and permeability. Application to analysis and design of foundation elements. Laboratory included.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MAE310 - FLUID MECHANICS I (3)

**Corequisites**

- Concurrently enrolled in:
  - CE373 - SOIL MECHANICS LAB (1)

**CE373 - SOIL MECHANICS LAB****Long Course Title**

SOIL MECHANICS LAB

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - CE372 - SOIL MECHANICS & FOUNDATION (3)

**CE375 - MECHANICS OF MATERIALS LAB****Long Course Title**

MECHANICS OF MATERIALS LAB

**Course Description**

Experimental verification of material properties and structural deformation under axial, torsional, and bending loads. Test procedures, use of instrumentation, interpretation of experimental results and comparison to theory. (Same as MAE 375). Corequisites: CE 370.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - CE370 - MECHANICS OF MATERIALS (3)

**Equivalent Course(s)**

**CE380 - CIVIL ENGINEERING MATERIALS****Long Course Title**

CIVIL ENGINEERING MATERIALS

**Course Description**

Performance properties and selection criteria of various materials used in the practice of civil engineering including aggregates, Portland cement, concrete, bituminous materials, and timber. Emphasis will be placed on standard methods of testing and characterization. Includes a weekly lab.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CE370 - MECHANICS OF MATERIALS (3)
  - MAE370 - MECHANICS OF MATERIALS (3)

**Corequisites**

- Concurrently enrolled in:
  - CE380L - CE MATERIALS LAB

**CE380L - CE MATERIALS LAB****Long Course Title**

CIVIL ENGINEERING MATERIALS LABORATORY

**Course Description**

Standard methods of testing and characterization of various materials used in the practice of civil engineering. Determination of civil engineering materials properties.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CE380 - CIVIL ENGINEERING MATERIALS (3)

**CE381 - STRUCTURAL ANALYSIS I****Long Course Title**

STRUCTURAL ANALYSIS I

**Course Description**

Reactions, shears, moments in determinate structures. Influence lines, energy methods in computing deformations. Introduction to indeterminate structures.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE272 - DYNAMICS (3)
    - MAE272 - DYNAMICS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)
  - Must have a class standing of Junior or higher

**CE411 - INTRO GEOGRAPHICAL INFO SYS****Long Course Title**

INTRODUCTION TO GEOGRAPHICAL INFORMATION SYSTEMS

**Course Description**

Introduces vector, raster, and tabular concepts. Topics include spatial relationships, map features, attributes, relational database, layers of data, data ingesting, digitizing from maps, projections, output, and availability of public data sets.

**Credits**

3

**Prerequisites**

- Must have a class standing of Senior

**Cross-Listed Course**

CE511 - INTRO GEOGRAPHICAL INFO SYS

**CE420 - URBAN TRANSPORTATION PLANNING****Long Course Title**

URBAN TRANSPORTATION PLANNING

**Course Description**

Planning of highways systems and terminals as part of a complete planning approach; public transportation system planning; transportation planning studies, projection analysis, plan formulation, and programming.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE321 - INTRO TO TRANSPORTATION ENG (3)

**Cross-Listed Course**

CE520 - URBAN TRANSPORTATION PLANNING

**CE422 - TRAFFIC ENGINEERING DESIGN****Long Course Title**

TRAFFIC ENGINEERING DESIGN

**Course Description**

Driver, pedestrian and vehicle characteristics. Principles of traffic flow for improved highway traffic service and safety. Design freeways, rural roads, urban streets, traffic signals, signs, channelization, and other traffic control measures.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE321 - INTRO TO TRANSPORTATION ENG (3)

**CE441 - HYDRAULIC ENGINEERING DESIGN****Long Course Title**

HYDRAULIC ENGINEERING DESIGN

**Course Description**

Water-hammer analysis, open channel flow, hydraulic structures such as dams, spillways, stilling basins, flood control devices, locks, pipe-flow systems and water-supply facilities, and computational methods.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE310 - FLUID MECHANICS I (3)

**CE449 - INTRO ENVIRONMENTAL ENGR****Long Course Title**

INTRODUCTION TO ENVIRONMENTAL ENGINEERING

**Course Description**

Engineering aspects of air, water, and thermal pollution. Hydrologic cycle, water sources and uses; industrial and other sources of primary and secondary pollutants. Transport process in environmental problems and their control. (Same as CE 549 and CHE 549)

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE341 - THERMODYNAMICS I (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MAE310 - FLUID MECHANICS I (3)

**Equivalent Course(s)****Cross-Listed Course**

CE549 - INTRO ENVIRONMENTAL ENGR

**CE452 - CREDIT EXPERIENTIAL LEARNING****Long Course Title**

CREDIT FOR EXPERIENTIAL LEARNING

**Course Description**

Students are engaged in research and creative projects as meaningful experiential learning opportunities. The course fosters cooperation between students and faculty in a research or creative endeavor, and enhances the students' education via active participation in a research, creative or scholarly project.

**Credits**

1 - 3

**Prerequisites**

- Must not have a class standing of Freshman

**CE456 - WATER QUALITY CONTROL PROC****Long Course Title**

WATER QUALITY CONTROL PROCESSES

**Course Description**

Principles of public water-supply design. Source selection, collection, purification, and distribution for municipal use. Collection of waste waters, their treatment and disposal.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE449 - INTRO ENVIRONMENTAL ENGR (3)

**Corequisites**

- Concurrently enrolled in:
  - CE456L - WATER QUALITY CONTROL LAB

**Cross-Listed Course**

CE556 - WATER QUALITY CONTROL PROC

**CE456L - WATER QUALITY CONTROL LAB****Long Course Title**

WATER QUALITY CONTROL PROCESSES LAB

**Course Description**

Complements material for CE 456

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CE456 - WATER QUALITY CONTROL PROC (3)



**CE457 - HYDROLOGY****Long Course Title**

HYDROLOGY

**Course Description**

Occurrence and movements of water over the earth's surface for engineering planning and design. Relationship of precipitation to stream-flow with frequency analysis, flood routing, and unit hydrograph theory.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE310 - FLUID MECHANICS I (3)

**Cross-Listed Course**

CE557 - HYDROLOGY

**CE459 - SEL TOPICS CIVIL ENGINEERING****Long Course Title**

SELECT TOPICS IN CIVIL ENGINEERING

**Course Description**

Special topics in Civil Engineering.

**Credits**

1 - 6

**Cross-Listed Course**

CE559 - SEL TOPICS CIVIL ENGINEERING

**CE471 - ADVANCED SOIL MECHANICS****Long Course Title**

ADVANCED SOIL MECHANICS

**Course Description**

Continuum mechanics applied to soil behavior. Theoretical approaches to consolidation, shear strength, slope stability and soil stabilization.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE372 - SOIL MECHANICS & FOUNDATION (3)

**Cross-Listed Course**

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**CE472 - SOIL DYNAMICS****Long Course Title**

SOIL DYNAMICS

**Course Description**

Behavior of soils under dynamic, earthquake and blast loading. Analysis of foundation vibration and isolation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE372 - SOIL MECHANICS & FOUNDATION (3)

**Cross-Listed Course**

CE572 - SOIL DYNAMICS

**CE474 - APP MECHANICS OF SOLIDS****Long Course Title**

APPLIED MECHANICS OF SOLIDS

**Course Description**

Stresses and strains at a point, theories of failures, stress concentration factors, thick-walled cylinders, torsion of noncircular members, curved beams, unsymmetrical bending and shear center. (Same as CE 574 and MAE 474 or MAE 574)

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CE370 - MECHANICS OF MATERIALS (3)
  - MAE370 - MECHANICS OF MATERIALS (3)

**Equivalent Course(s)**

MAE474 - APP MECHANICS OF SOLIDS

**Cross-Listed Course**

CE574 - APP MECHANICS OF SOLIDS

**CE481 - STRUCTURAL ANALYSIS II****Long Course Title**

STRUCTURAL ANALYSIS II

**Course Description**

Reactions, shears, moments and deformations in complex structural systems. Statically indeterminate systems, advanced geometric and energy methods.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE381 - STRUCTURAL ANALYSIS I (3)

**Cross-Listed Course**

CE581 - STRUCTURAL ANALYSIS II

**CE483 - REINFORCED CONCRETE DESIGN****Long Course Title**

REINFORCED CONCRETE DESIGN

**Course Description**

Theory and practice of reinforced concrete design. Theory and design of high strength concrete mixtures. Design of reinforced concrete beams, slabs, and columns using the ultimate strength design code of the American Concrete Institute.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE380 - CIVIL ENGINEERING MATERIALS (3)
  - CE381 - STRUCTURAL ANALYSIS I (3)

**Cross-Listed Course**

CE583 - REINFORCED CONCRETE DESIGN

**CE484 - STEEL DESIGN****Long Course Title**

STEEL DESIGN

**Course Description**

Principles of design of steel structures using ASD methods. Analysis and design of structural elements using beams, columns, connection details.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE381 - STRUCTURAL ANALYSIS I (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

**Cross-Listed Course**

CE584 - STEEL DESIGN

**CE485 - FOUNDATION ENGINEERING****Long Course Title**

FOUNDATION ENGINEERING

**Course Description**

Design of foundations with emphasis on reinforced concrete, footings, caissons, piles retaining walls, and mat foundations. Effect of bearing pressure on foundations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE372 - SOIL MECHANICS & FOUNDATION (3)
  - CE483 - REINFORCED CONCRETE DESIGN (3)

**Cross-Listed Course**

CE585 - FOUNDATION ENGINEERING

**CE487 - BRIDGE DESIGN****Long Course Title**

BRIDGE DESIGN

**Course Description**

Structural design of bridge components based on governing design codes, loadings, and structural analysis. Topics may include the introduction to Load and Resistance Factor Design (LRFD) design philosophy, loads and analysis, reinforced concrete girders and deck slabs, steel girders, etc.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CE483 - REINFORCED CONCRETE DESIGN (3)

**Cross-Listed Course**

CE587 - BRIDGE DESIGN

**CE498 - CIVIL ENGINEERING DESIGN I****Long Course Title**

CIVIL ENGINEERING DESIGN I

**Course Description**

Planning and analysis for a preliminary civil engineering design project. Topics include fundamentals of management, public policy, cost estimation, environmental impacts, soils analysis, and ethical considerations. Part 1 of a 2-part course.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - CE321 - INTRO TO TRANSPORTATION ENG (3)
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CE372 - SOIL MECHANICS & FOUNDATION (3)
    - CE483 - REINFORCED CONCRETE DESIGN (3)

**CE499 - CIVIL ENGINEERING DESIGN II****Long Course Title**

CIVIL ENGINEERING DESIGN II

**Course Description**

Analysis and design of a complete civil engineering project including establishment of design criteria, cost estimates, specifications, and plans. Topics include ethical considerations in engineering design and practice. Emphasis on developing written and oral communication skills.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE498 - CIVIL ENGINEERING DESIGN I (1)

**Corequisites**

- Concurrently enrolled in:
  - CE499L - DESIGN II LABORATORY

**CE499L - DESIGN II LABORATORY****Long Course Title**

CIVIL ENGINEERING DESIGN II LABORATORY

**Course Description**

Lab component of CE 499.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CE499 - CIVIL ENGINEERING DESIGN II (2)

**CE511 - INTRO GEOGRAPHICAL INFO SYS****Long Course Title**

INTRODUCTION TO GEOGRAPHICAL INFORMATION SYSTEMS

**Course Description**

Introduces vector, raster and tabular concepts, emphasizing the vector approach. Topics include: spatial relationships, map features, attributes, relational database, layers of data, data ingesting, digitizing from maps, projections, output, applications, and availability of public data sets.

**Credits**

3

**Cross-Listed Course**

CE411 - INTRO GEOGRAPHICAL INFO SYS

**CE520 - URBAN TRANSPORTATION PLANNING****Long Course Title**

URBAN TRANSPORTATION PLANNING

**Course Description**

Planning of highway systems and terminals as part of a complete planning approach; public transportation system planning; transportation planning studies, projection analysis, plan formulation, and programming.

**Credits**

3

**Cross-Listed Course**

CE420 - URBAN TRANSPORTATION PLANNING

**CE549 - INTRO ENVIRONMENTAL ENGR****Long Course Title**

INTRODUCTION TO ENVIRONMENTAL ENGINEERING

**Course Description**

Engineering aspects of air, water, and thermal pollution. Hydrologic cycle, water sources and uses; industrial and other sources of primary and secondary pollutants. Transport process in environmental problems and in their control.

**Credits**

3

**Equivalent Course(s)**

CHE549 - INTRO ENVIRONMENTAL ENGR

**Cross-Listed Course**

CE449 - INTRO ENVIRONMENTAL ENGR

**CE550 - ENVIRONMENTAL CONTROL****Long Course Title**

ENVIRONMENTAL CONTROL

**Course Description**

Engineering design and synthesis of environmental control systems. Control of multiphase systems with application to air and water pollution control.

**Credits**

3

**CE552 - INDUSTRIAL WASTE TREATMENT****Long Course Title**

INDUSTRIAL WASTE TREATMENT

**Course Description**

Advanced topics in the area of hazardous waste management and water quality control. Emphasis on industrial waste, including hazardous waste management. Topics include: generation, storage, collection, transfer, disposal, recycling, economic, environmental, and regulatory considerations.

**Credits**

3

**CE556 - WATER QUALITY CONTROL PROC****Long Course Title**

WATER QUALITY CONTROL PROCESSES

**Course Description**

Principles of public water supply design. Source selection, collection, purification, and distribution for municipal use. Collection of waste waters, their treatment, and disposal.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE549 - INTRO ENVIRONMENTAL ENGR (3)

**Cross-Listed Course**

CE456 - WATER QUALITY CONTROL PROC

**CE557 - HYDROLOGY****Long Course Title**

HYDROLOGY

**Course Description**

Occurrence and movement of water over the earth's surface for engineering planning and design. Relationship of precipitation to streamflow with frequency analysis, flood routing, and unit hydrograph theory.

**Credits**

3

**Cross-Listed Course**

CE457 - HYDROLOGY



**CE559 - SEL TOPICS CIVIL ENGINEERING**  
**Long Course Title**

SELECT TOPICS IN CIVIL ENGINEERING

**Credits**

1 - 6

**Cross-Listed Course**

CE459 - SEL TOPICS CIVIL ENGINEERING

**CE572 - SOIL DYNAMICS**  
**Long Course Title**

SOIL DYNAMICS

**Course Description**

Behavior of soils under dynamic, earthquake and blast loading. Analysis of foundation vibration and isolation.

**Credits**

3

**Cross-Listed Course**

CE472 - SOIL DYNAMICS

**CE574 - APP MECHANICS OF SOLIDS**  
**Long Course Title**

APPLIED MECHANICS OF SOLIDS

**Course Description**

Stresses and strains at a point, theories of failures, stress concentration factors, thick-walled cylinders, torsion of noncircular members, curved beams, unsymmetrical bending, and shear center.

**Credits**

3

**Equivalent Course(s)**

MAE574 - APP MECHANICS OF SOLIDS

**Cross-Listed Course**

CE474 - APP MECHANICS OF SOLIDS

**CE578 - MATRIX METH STRUCT MECH**  
**Long Course Title**

MATRIX METHODS IN STRUCTURAL MECHANICS

**Course Description**

Matrix application to formulation and solution of linear problems in structural mechanics. Stresses, vibrations, and stability of engineering structures.

**Credits**

3

**CE581 - STRUCTURAL ANALYSIS II****Long Course Title**

STRUCTURAL ANALYSIS II

**Course Description**

Reactions, shears, moments and deformations in complex structural systems. Statically indeterminate systems, advanced geometric and energy methods.

**Credits**

3

**Cross-Listed Course**

CE481 - STRUCTURAL ANALYSIS II

**CE583 - REINFORCED CONCRETE DESIGN****Long Course Title**

REINFORCED CONCRETE DESIGN

**Course Description**

Theory and practice of reinforced concrete design. Theory and design of high strength concrete mixtures. Design of reinforced concrete beams, slabs and columns using the ultimate strength design code of the American Concrete Institute.

**Credits**

3

**Cross-Listed Course**

CE483 - REINFORCED CONCRETE DESIGN

**CE584 - STEEL DESIGN****Long Course Title**

STEEL DESIGN

**Course Description**

Principles of the design of steel structures using ASD methods. Analysis and design of structural elements including beams, columns, and connection details.

**Credits**

3

**Cross-Listed Course**

CE484 - STEEL DESIGN

**CE585 - FOUNDATION ENGINEERING****Long Course Title**

FOUNDATION ENGINEERING

**Course Description**

Design of foundations with emphasis on reinforced concrete, footings, caissons, piles, retaining walls, and mat foundations. Effect of bearing pressure on foundations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE583 - REINFORCED CONCRETE DESIGN (3)

**Cross-Listed Course**

CE485 - FOUNDATION ENGINEERING

**CE586 - ADV CEMENTITIOUS & COMPOSITE****Long Course Title**

ADVANCED CEMENTITIOUS & COMPOSITE

**Course Description**

Concrete structures, rheology, mechanical properties, environmental durability, dimensional stability, advanced concrete technologies (such as high strength, fiber reinforced, and fracture mechanics), advanced fiber polymer composites, and repair/rehabilitation of concrete structures.

**Credits**

3

**CE587 - BRIDGE DESIGN****Long Course Title**

BRIDGE DESIGN

**Course Description**

Structural design of bridge components based on governing design codes, loadings, and structural analysis. Topics may include the introduction to Load and Resistance Factor Design (LRFD) design philosophy, loads and analysis, reinforced concrete girders and deck slabs, steel girders, etc.

**Credits**

3

**Cross-Listed Course**

CE487 - BRIDGE DESIGN

**CE603 - ADVANCED CONCRETE DESIGN****Long Course Title**

ADVANCED CONCRETE DESIGN

**Course Description**

Design of concrete columns; bond, anchorage and reinforcing details; design of two-way slabs; design and analysis of multistory building frames; introduction to prestressed concrete; design of prestressed cross-sections for moment.

**Credits**

3

**CE611 - GIS IN CIVIL ENGINEERING****Long Course Title**

GEOGRAPHICAL INFORMATION SYTSTEMS IN CIVIL ENGINEERING

**Course Description**

Advanced topics in geographical information systems (GIS) with civil engineering applications. Emphasis will be placed on spatial/temporal data analyses using digitized maps and database information in an area of CE specialization. Research project will be required.

**Credits**

3

**CE622 - ADVANCED TRAFFIC ENGRG DESIGN****Long Course Title**

ADVANCED TRAFFIC ENINGEERING DESIGN

**Course Description**

In depth analysis of traffic engineering concepts related to intersection analysis (signalized and un-signalized) as well as arterial systems.

**Credits**

3

**CE646 - EROSION & SEDIMENTATION****Long Course Title**

EROSION & SEDIMENTATION

**Course Description**

River morphology and river response, incipient erosion and its prediction, bed form and roughness, degradation, aggradation, and local scour in alluvial rivers. Design of stable channels, computation of bed load.

**Credits**

3

**CE654 - ENVIRONMENTAL TRANSPORT****Long Course Title**

ENVIRONMENTAL TRANSPORT

**Course Description**

Fundamental principles of mass transport, chemical partitioning/transformations in environmental systems. Practical transport examples for surface water, ground water, and atmospheric systems will be presented and mathematical modeling will be utilized for solutions.

**Credits**

3

**CE656 - ADV. WASTEWATER ENGINEERING****Long Course Title**

ADVANCED WASTEWATER ENGINEERING

**Course Description**

Advanced topics in wastewater engineering. Theory and modeling of biological wastewater treatment processes. Focus on theory/modeling of biological processes and current research on advanced wastewater treatment processes.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CE556 - WATER QUALITY CONTROL PROC (3)

**CE659 - SEL TOPICS CIVIL ENGINEERING****Long Course Title**

SELECT TOPICS IN CIVIL ENGINEERING

**Credits**

1 - 6

**CE660 - STRUCTURAL DYNAMICS****Long Course Title**

STRUCTURAL DYNAMICS

**Course Description**

Application of the theory of vibrations to discrete and continuous models of structures. Numerical methods of analysis for both spatial and temporal variables. Model synthesis and step-by-step time integration methods. Finite element applications: substructuring techniques.

**Credits**

3

**Equivalent Course(s)**

MAE660 - STRUCTURAL DYNAMICS

**CE671 - CONTINUUM MECHANICS****Long Course Title**

CONTINUUM MECHANICS

**Course Description**

Kinematics and kinetics, various coordinate systems, constitutive equations for continuous media; governing partial differential equations from first and second laws of thermodynamics; applications to solids, liquids, and gases.

**Credits**

3

**Equivalent Course(s)**

MAE671 - CONTINUUM MECHANICS

**CE672 - THEORY OF ELASTICITY****Long Course Title**

THEORY OF ELASTICITY

**Course Description**

Formulation of boundary-value problems of classical elasticity. Application to plane problems, prismatic members, and axisymmetric problems. Introduction to three-dimensional problems.

**Credits**

3

**Equivalent Course(s)**

MAE672 - ELASTICITY

**CE679 - HYPERVELOCITY IMPACT PHENOMENA****Long Course Title**

HYPERVELOCITY IMPACT PHENOMENA

**Course Description**

Fundamental principles of penetration mechanics. Analytical and numerical approaches to perforation and penetration problems. Shock jump conditions, hugoniot, and equations of state; low, high, and hypervelocity impacts of finite and thin targets.

**Credits**

3

**CE696 - GRAD INTERNSHIP CE ENGR****Long Course Title**

GRADUATE INTERNSHIP: CIVIL AND ENVIRONMENTAL ENGINEERING

**Course Description**

Active involvement in an engineering project in an engineering enterprise, professional organization or government agency that has particular interest and relevance to the graduate student.

**Credits**

1 - 9

**Prerequisites**

- Instructor Permission Required

**CE697 - MASTER'S PLAN II PROJECT****Long Course Title**

MASTER'S PLAN II PROJECT

**Course Description**

Application-oriented student project designed to show competence in an area of civil engineering.

**Credits**

3

**CE699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester in which a student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for MSE students. A maximum of nine hours of credit is awarded upon successful completion of master's thesis. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

**CE722 - SLIDING MODE CONTROL****Long Course Title**

SLIDING MODE CONTROL

**Credits**

3

**CE756 - HAZARDOUS WASTE REMEDIAT****Long Course Title**

HAZARDOUS WASTE REMEDIATION

**Course Description**

Engineering design skills applied to the solution of real world hazardous waste remediation problems. Remedy screening and selection; treatment train development for a Superfund facility.

**Credits**

3

**CE762 - WAVE MOTION CONT ELASTIC BODIE****Long Course Title**

WAVE MOTION CONT ELASTIC BODIE

**Course Description**

Elements of stress wave propagation in bounded elastic media. Propagation of elastic waves in infinite and semi-infinite bodies, cylinders, rods and beams.

**Credits**

3

**Equivalent Course(s)**

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**CE765 - RAND VIBRAT ELASTIC SYSTEM****Long Course Title**

RANDOM VIBRATION ELASTIC SYSTEMS

**Course Description**

Dynamic analysis of elastic systems including the response of complex structures to random excitations. Typical excitations include random wind, thermal, earthquake, aerodynamic, and ocean wave phenomena. Probabilistic mechanics methods. Concepts of reliability. Stationary and ergodic processes.

**Credits**

3

**Equivalent Course(s)**

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**CE773 - THEORY OF SHELLS****Long Course Title**

THEORY OF SHELLS

**Course Description**

Analysis of thin plates and shells, including higher approximations theories and transverse-shear deformations; illustration of theories by selected problems.

**Credits**

3



**CE774 - FINITE ELEMENT ANAL II****Long Course Title**

FINITE ELEMENT ANALYSIS II

**Course Description**

Advanced topics in finite element analysis: application to nonlinear partial differential equations in continuum mechanics: theoretical studies of convergence and stability of solutions.

**Credits**

3

**Equivalent Course(s)**

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**CE799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

PhD Research

**Credits**

0 - 9

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## Co-op, Internship, UG Research

**OCS000 - CO-OP, INTERNSHP, UG RESRCH****Long Course Title**

CO-OP, INTERNSHIPS, UNDERGRADUATE RESEARCH

**Credits**

0

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## College Academy

**UAH101 - COLLEGE ACADEMY CHARGE UP****Course Description**

UAH 101 is designed to assist new College Academy students in making a fully successful transition to The University of Alabama in Huntsville, both within and beyond the classroom. The goals of this course focus on developing a sense of community, promoting engagement in the academic life of the university, as well as at Jemison High School, and articulating to students the expectations of the University. In addition, the course will offer exploratory learning activities to introduce students to the university via hands-on activities. Restrictions - Must be member of Huntsville City School College Academy program.

**Credits**

1

**Charger Foundations**

COLLEGE ACADEMY CHARGE UP

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## Communication Arts

### **CM113 - PUBLIC SPEAKING**

#### **Long Course Title**

PUBLIC SPEAKING

#### **Course Description**

Develops public speaking skills through an examination of rhetorical theory, training, and practice. Includes informative, persuasive, and other forms of speeches to prepare students for oral presentations in college and post-college ("real world") settings.

#### **Credits**

3

#### **Charger Foundations**

Area II: Humanities

### **CM205 - INTRO TO JOURNALISM**

#### **Long Course Title**

INTRODUCTION TO JOURNALISM

#### **Course Description**

Focuses on basic news writing skills specific to print journalism. Students will learn to identify new based on news values, develop leads, organize information, write stories in the inverted pyramid style, revise drafts, and copy-edit articles, all while working under simulated deadline pressure.

#### **Credits**

3

### **CM220 - INTRO PUBLIC RELATIONS**

#### **Long Course Title**

INTRODUCTION TO PUBLIC RELATIONS

#### **Course Description**

This course is designed to introduce students to the public relations profession. Through study of rhetorical and communication strategies, individual and group projects, as well as speaking and writing experiences, students gain the knowledge necessary to actively participate as effective public relation professionals.

#### **Credits**

3

**CM231 - FOUNDATIONS OF HUMAN COMMUNICA****Long Course Title**

FOUNDATIONS OF HUMAN COMMUNICATION

**Course Description**

Examines how human communication shapes and adapts to a variety of practical settings public, interpersonal, organizational, mass, and technical. It prepares students for effective work in various communication contexts.

**Credits**

3

**CM251 - DECISION-MAKING IN SMALL GROUP****Long Course Title**

DECISION-MAKING IN SMALL GROUPS

**Course Description**

Provides working knowledge of how small groups communicate in the decision-making process. Students put theory into practice by functioning as group participants, observers, and consultants. Emphasis is placed on leadership, theoretical application, group participation, and oral presentation.

**Credits**

3

**CM310 - PERSUASION****Long Course Title**

PERSUASION

**Course Description**

Provides foundation in the theories, principles, and strategies of social influence through theory and application. Students explore persuasive communication, social influence, and compliance-gaining from a social-scientific level and examine the production and consumption of persuasive messages.

**Credits**

3

**CM313 - BUSINESS & PROFESSIONAL COMM****Long Course Title**

BUSINESS & PROFESSIONAL COMMUNICATION

**Course Description**

Examines communication theories and practices relevant to the business context with a focus on oral presentations, interviewing, group leadership, and face-to-face communication. Develops knowledge and skills necessary for effective communication within business environments. (Prepare business administration students to meet the oral communication requirement in upper division and graduate business courses).

**Credits**

3

**Prerequisites**

- Not admitted to BA COMM ART

**CM330 - NONVERBAL COMMUNICATION****Long Course Title**

NONVERBAL COMMUNICATION

**Course Description**

Examines the diversity of specific human nonverbal behavior, such as eye contact, touch, time, appearance, and distance and how the behaviors influence everyday communication experiences. Drawing on theory, students explore the practical ways verbal and nonverbal communication intersect in everyday interactions to create shared meaning.

**Credits**

3

**Equivalent Course(s)**

PY330 - NONVERBAL COMMUNICATION

**CM331 - COMMUNICATION THEORY****Long Course Title**

COMMUNICATION THEORY

**Course Description**

Examines significant theoretical frameworks for the study of human communication and mass communication. Develops knowledge of communication processes and social influence. Provides preparation for senior seminar in communication theory and research.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)

**CM333 - INTERPERSONAL COMMUNICATION****Long Course Title**

INTERPERSONAL COMMUNICATION

**Course Description**

Provides an introduction to the process of communication between individuals. Course content focuses on the application of theory and research to dyadic relationships spanning intimates, families, and friends.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in all of the following:
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - Instructor Permission

## **CM340 - SPEC TOPICS IN COMM ARTS**

### **Long Course Title**

SPECIAL TOPICS IN COMMUNICATION ARTS

### **Course Description**

Topics announced in advance. Representative topics include rhetoric and war, technical theatre, and culture and communication. May be repeated twice for credit.

### **Credits**

3

## **CM370 - COMM RESEARCH METHODS**

### **Long Course Title**

COMMUNICATION RESEARCH METHODS

### **Course Description**

Examines social scientific concepts, theories and designs commonly used in interpersonal communication research. Develops knowledge and skills necessary for employment in fields involving the study of communication behavior and perception. Provides preparation for senior seminar in communication theory and research.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BA COMM ART
  - Must have a class standing of Junior or higher
  - Earned between 3 and 6 credits from the following course sets:

*keyboard\_arrow\_up*

Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

**CM375 - RHETORICAL CRITICISM****Long Course Title**

RHETORICAL CRITICISM

**Course Description**

This course is an introduction to the critical analysis of public discourse. Specifically, it focuses on understanding how the variables of situation, audience, and rhetoric influence the production and reception of public messages. Teaching students to understand the persuasive potential of messages prepares them as critical consumers, analysts, and potential creators of such messages.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in all of the following:
    - CM113 - PUBLIC SPEAKING (3)
  - Instructor Permission

**CM400 - INTERNSHIP****Long Course Title**

INTERNSHIP

**Course Description**

Practical experience in the workplace allows the student to apply principles, theories, and skills learned in communication arts courses. Arranged by the student with consent of the chair, the student meets regularly with a faculty advisor, keeps a log of activities, and submits a report on the internship.

**Credits**

1 - 6

**Prerequisites**

- Complete all of the following
  - Admitted to: BA COMM ART
  - Must have a class standing of Senior
  - Instructor Permission

**CM405 - ADVANCED MEDIA WRITING****Long Course Title**

ADVANCED MEDIA WRITING

**Course Description**

An upper level course that offers an overview of various media writing genres, including Broadcast, Advertising and Public Relations. Students complete a mix of timed assignments within each context to acquire a more complete survey of media writing and prepare for a career within the mass media.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CM205 - INTRO TO JOURNALISM (3)

**Cross-Listed Course**

CM505 - ADVANCED MEDIA WRITING

**CM408 - CLASSICAL RHET THEORY****Long Course Title**

CLASSICAL RHETORICAL THEORY

**Course Description**

This course surveys the early development of rhetorical theory in the Western world, from its sophistic origins in the 5th century BCE, through the Greek philosophers and educators, to the Romans and early Christians.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CM113 - PUBLIC SPEAKING (3)

**Cross-Listed Course**

CM508 - CLASSICAL RHETORICAL THEORY

**CM409 - CONTEMPORARY RHETORICAL THEORY****Long Course Title**

CONTEMPORARY RHETORICAL THEORY

**Course Description**

This course surveys contemporary rhetorical thought, including modern and postmodern theories. The course requires rigorous academic analysis and critique as students explore historical and current rhetorical concepts.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - CM113 - PUBLIC SPEAKING (3)
  - Must not have a class standing of Freshman

**Cross-Listed Course**

CM509 - CONTEMPORARY RHETORICAL THEORY

**CM418 - LEGAL ARGUMENT****Long Course Title**

LEGAL ARGUMENT

**Course Description**

Examines argumentation in legal communities, that is, the way lawyers and judges provide reasoned support for the positions they defend concerning what the law requires in a given case. It considers common forms of legal argument, sources and forms of evidence, and legal values that underlie legal argument. It provides students with a critical perspective from which to judge legal arguments and a basic set of tools for developing legal arguments.

**Credits**

3

**Cross-Listed Course**

CM518 - LEGAL ARGUMENT



## **CM420 - PUBLIC RELATIONS WRITING**

### **Long Course Title**

PUBLIC RELATIONS WRITING

### **Course Description**

This course provides students with professionalization in their writing and editorial skills in public relations. By emphasizing different audiences and various media, students will find and hone their public relations voice. Students will gain experience with instant responses, making ethical and legal decisions, and practicing a wide range of PR writing and design including the development of media kits, pitches, backgrounders, press releases, memos, newsletters, radio announcements, and brochures.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CM220 - INTRO PUBLIC RELATIONS (3)

### **Cross-Listed Course**

CM520 - PUBLIC RELATIONS WRITING

## **CM430 - MASS MEDIA IN AMERICA**

### **Long Course Title**

MASS MEDIA IN AMERICA

### **Course Description**

This course provides an overview of major forms of mass media communication. It focuses on both print and electronic media, its history and structure as well as on theories of mass communication. Students will become familiar with the current role and influence of media in society.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Junior or higher

## **CM431 - SENIOR SEMINAR**

### **Long Course Title**

SENIOR SEMINAR

### **Course Description**

Senior capstone course involving either a scholarly project or an approved communication-intensive internship.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - CM370 - COMM RESEARCH METHODS (3)
    - CM375 - RHETORICAL CRITICISM (3)

**CM433 - DARK SIDE INTERPERSONAL COMM****Long Course Title**

DARK SIDE INTERPERSONAL COMMUNICATION

**Course Description**

Traditional Interpersonal Communication pedagogy focuses on more of the positive aspects of relationship formation and maintenance. This course offers a more complete view of human relationships by exploring a variety of topics related to the "darker" side of relationships situated in the contexts of friendships, family members, and intimates. By exploring issues such as deception, fatal attraction, jealousy and envy, conflict, stalking, abuse, and many others, students acquire a more complete view of human relationships.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)

**Cross-Listed Course**

CM533 - DARK SIDE INTERPERSONAL COMM

**CM435 - SOCIAL MEDIA****Long Course Title**

SOCIAL MEDIA

**Course Description**

This course focuses on uses and effects of social media in interpersonal, organizational, mass mediated, health, and political settings. Social media technologies take on many different forms including social networking sites, micro-blogging, wikis, online videos, and blogs. Following questions are discussed in class: Who uses social media? How do people use social media to develop relationships, get social support, and evoke political change? Is privacy dead? How do employers use social media to check on employees?

**Credits**

3

**Cross-Listed Course**

CM535 - SOCIAL MEDIA

**CM440 - PUBLIC RELATIONS CAMPAIGN****Long Course Title**

PUBLIC RELATIONS CAMPAIGN

**Course Description**

This course provides professionalization and team work experience for students in the public relations track. Students practice the research, planning, implementation, and evaluation of strategic communication plans for various public relations contexts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CM220 - INTRO PUBLIC RELATIONS (3)

**Cross-Listed Course**

CM540 - PUBLIC RELATIONS CAMPAIGNS

**CM442 - USABILITY STUDIES****Long Course Title**

USABILITY STUDIES

**Course Description**

Introduces students to theory and practice of usability, which involves designing useful, easy-to-use websites, software, and products. The course involves group projects conducting real-work usability testing.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Equivalent Course(s)**

EH442 - USABILITY STUDIES

**Cross-Listed Course**

CM542 - USABILITY STUDIES

**CM444 - ADVERTISING****Long Course Title**

ADVERTISING

**Course Description**

This course will examine the emergence of advertising as a form of communication, its influence upon other forms of mediated communications and its impact upon culture and society. Students will learn how to develop and present an advertising strategy for an actual brand.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Cross-Listed Course**

CM544 - ADVERTISING

**CM451 - ORGANIZATIONAL TRNG & DEVELOP****Long Course Title**

Organizational Training and Development

**Course Description**

Provides upper-level undergraduates with the opportunity to learn how to design organizational training programs beginning with the needs assessment and continuing through the evaluation and implementation phases.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Cross-Listed Course**

CM551 - ORGANIZATIONAL TRAIN & DEVELOP

**CM452 - USER-CENTERED DESIGN****Long Course Title**

USER-CENTERED DESIGN

**Course Description**

Introduces students to user-centered design principles that inform the practice of user experience design. Students will use visual thinking as they complete contextual inquiries and mapping exercises.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Equivalent Course(s)**

EH452 - USER-CENTERED DESIGN

**Cross-Listed Course**

CM552 - USER-CENTERED DESIGN

**CM454 - NEW MEDIA WRITING & RHETORIC****Long Course Title**

NEW MEDIA WRITING & RHETORIC

**Course Description**

This course teaches students to apply rhetorical principles across a variety of media and includes an examination of communication strategies used widely in academic and industry settings. The course focuses on new media through an exploration of digital technologies and the way digital culture and new media have dramatically impacted reading, writing, and research practices.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EH101 - COLLEGE WRITING I (3)
    - EH102 - COLLEGE WRITING II (3)
  - Must have a class standing of Junior or higher

**Cross-Listed Course**

CM554 - NEW MEDIA WRITING & RHETORIC

**CM455 - COMMUNICATION & CULTURE****Long Course Title**

COMMUNICATION & CULTURE

**Course Description**

This course focuses on the application of theory and research to intercultural communication. Topics and activities assist the students in developing communication skills that improve their competence in intercultural situations. By addressing the different world views that shape our perceptions, values, attitudes, and beliefs of different people, the Culture and Communication course challenges students to become aware of cultural differences, avoid ethnocentrism, and work toward effective communication with unlike others.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**CM460 - CRISIS COMMUNICATION****Long Course Title**

CRISIS COMMUNICATION

**Course Description**

During a time where companies face instant and intense scrutiny. It is imperative to know how to use effective crisis management. This course focuses on the steps of crisis and issue management. It also includes in-depth analysis of current crisis situations.

**Credits**

3

**CM491 - THE RHETORIC OF PUBLIC MEMORY****Long Course Title**

THE RHETORIC OF PUBLIC MEMORY

**Course Description**

Historical markers, monuments, memorials, and museums all contain public memory. The focus on this class is to rhetorically examine these curated southern sites for how they interpret the past for current audiences with future implications.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Cross-Listed Course**

CM591 - THE RHETORIC OF PUBLIC MEMORY

**CM499 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Directed, independent study allows a student to explore an approved scholarly inquiry within Communication Arts, and under the direction of a CM faculty member, resulting in a research paper or project. Student must present a project prospectus, or detailed syllabus, for approval of the faculty member and the department chair. Junior or Senior standing required.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**CM505 - ADVANCED MEDIA WRITING****Long Course Title**

ADVANCED MEDIA WRITING

**Course Description**

This course offers an overview of various media writing genres, including Broadcast, Advertising and Public Relations. Students complete a mix of timed assignments with each context to acquire a more complete survey of media writing and prepare for a career within the mass media.

**Credits**

3

**Cross-Listed Course**

CM405 - ADVANCED MEDIA WRITING

**CM508 - CLASSICAL RHETORICAL THEORY****Long Course Title**

CLASSICAL RHETORICAL THEORY

**Course Description**

This course surveys the early development of rhetorical theory in the Western world, from its sophistic origins in the 5th century BCE, through the Greek philosophers and educators, to the Romans and early Christians.

**Credits**

3

**Cross-Listed Course**

CM408 - CLASSICAL RHET THEORY

**CM509 - CONTEMPORARY RHETORICAL THEORY****Long Course Title**

CONTEMPORARY RHETORICAL THEORY

**Course Description**

This course surveys contemporary rhetorical thought, including modern and postmodern theories. The course requires rigorous academic analysis and critique as students explore historical and current rhetorical concepts.

**Credits**

3

**Cross-Listed Course**

CM409 - CONTEMPORARY RHETORICAL THEORY

**CM514 - CREATIVE NONFICTION WRITING****Long Course Title**

CREATIVE NONFICTION WRITING

**Course Description**

This course introduces students to the genre of creative non-fiction. Undergraduate students (CM 414) will write five essays and revise toward a final writing portfolio. Graduate students (CM 514) will write five essays and a collage assignment, revising toward a final portfolio.

**Credits**

3

**Cross-Listed Course**

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**CM518 - LEGAL ARGUMENT****Long Course Title**

LEGAL ARGUMENT

**Course Description**

This course examines argumentation in legal communities, that is, the way lawyers and judges provide reasoned support for the positions they defend concerning what the law requires in a given case. It considers common forms of legal argument, sources and forms of evidence, and legal values that underlie legal argument. It provides students with a critical perspective from which to judge legal arguments and a basic set of tools for developing legal arguments. This course will not provide any in-depth consideration of the content of civil, criminal or constitutional law, but will use examples from various areas of law to illustrate how legal arguments are developed.

**Credits**

3

**Cross-Listed Course**

CM418 - LEGAL ARGUMENT



**CM520 - PUBLIC RELATIONS WRITING****Long Course Title**

PUBLIC RELATIONS WRITING

**Course Description**

This course provides students with professionalization in their writing and editorial skills in public relations. By emphasizing different audiences and various media, students will find and hone their public relations voice. Students will gain experience with instant responses, making ethical and legal decisions, and practicing a wide range of PR writing and design including the development of media kits, pitches, backgrounders, press releases, memos, newsletters, radio announcements, and brochures. Students will gain firsthand experience writing on a digital platform for a non-profit organization and building a digital audience.

**Credits**

3

**Cross-Listed Course**

CM420 - PUBLIC RELATIONS WRITING

**CM530 - MASS MEDIA IN AMERICA****Long Course Title**

MASS MEDIA IN AMERICA

**Course Description**

This course is designed to examine the role and influence of different forms of media in various societies. The course focuses on evolutions in mass media in the larger world as a context for what has happened in America. The use, and sometimes abuse, of media has evolved continually as technology has advanced. By focusing on the structures and theories of mass communication, this course helps students make critical judgments about how media influences society and how society influences media.

**Credits**

3

**Cross-Listed Course**

CM430 - MASS MEDIA IN AMERICA

**CM533 - DARK SIDE INTERPERSONAL COMM****Long Course Title**

DARK SIDE INTERPERSONAL COMMUNICATION

**Course Description**

Research from the dark side of communication has typically been studied from a single standpoint confined to a specific context. This course offers a more complete view of human communication by exploring a variety of topics related to the "darker" side of interactions situated in the contexts of Interpersonal Communication, Organizational Communication, Computer Mediated Communication, Health Communication, and Blended Communication. By merging theory and practical application, the different contexts provide students with an enhanced understanding of how dark side behaviors are experienced and communicated.

**Credits**

3

**Cross-Listed Course**

CM433 - DARK SIDE INTERPERSONAL COMM

**CM535 - SOCIAL MEDIA****Long Course Title**

SOCIAL MEDIA

**Course Description**

This course focuses on uses and effects of social media in interpersonal, organizational, mass mediated, health, and political settings. It investigates questions such as: Who uses social media? Can we develop meaningful relationships through social media? How do people use social media to find information, get social support, and evoke political change? Is privacy dead? This course focuses on the history of social media and current computer-mediated communication theories.

**Credits**

3

**Cross-Listed Course**

CM435 - SOCIAL MEDIA

**CM540 - PUBLIC RELATIONS CAMPAIGNS****Long Course Title**

PUBLIC RELATIONS CAMPAIGNS

**Course Description**

This course provides professionalization and team work experience for students in the public relations track. Students practice the research, planning, implementation, and evaluation of strategic communication plans for various public relations contexts.

**Credits**

3

**Equivalent Course(s)**

EH540 - SP TOPICS IN ENGLISH STUDIES

**Cross-Listed Course**

CM440 - PUBLIC RELATIONS CAMPAIGN

**CM542 - USABILITY STUDIES****Long Course Title**

USABILITY STUDIES

**Course Description**

Introduces students to the theory and practices of usability, which involves designing useful, easy-to-use websites, software, and products. The course involves group projects conducting real-world usability testing.

**Credits**

3

**Equivalent Course(s)**

EH542 - USABILITY STUDIES

**Cross-Listed Course**

CM442 - USABILITY STUDIES

**CM544 - ADVERTISING****Long Course Title**

ADVERTISING

**Course Description**

This course defines advertising and considers how it works, how it is developed, and some controversies surrounding its use.

**Credits**

3

**Cross-Listed Course**

CM444 - ADVERTISING

**CM551 - ORGANIZATIONAL TRAIN & DEVELOP****Long Course Title**

ORGANIZATIONAL TRAINING & DEVELOPMENT

**Course Description**

Provides students with the opportunity to learn to design, and execute, professional organizational training programs. Students learn to design needs assessments, write training proposals and contracts, as well as design budgets, training scripts, presentations and post-evaluations for companies.

**Credits**

3

**Cross-Listed Course**

CM451 - ORGANIZATIONAL TRNG & DEVELOP

**CM552 - USER-CENTERED DESIGN****Long Course Title**

USER-CENTERED DESIGN

**Course Description**

Introduces students to user-centered design principles that inform the practice of user experience design. Students will use visual thinking as they complete contextual inquiries and mapping exercises.

**Credits**

3

**Equivalent Course(s)**

EH552 - USER-CENTERED DESIGN

**Cross-Listed Course**

CM452 - USER-CENTERED DESIGN

**CM553 - COMMUNICATING WITH USERS****Long Course Title**

COMMUNICATING WITH USERS

**Course Description**

This course teaches students how to effectively research user needs and produce technical communication documents to meet those needs.

**Credits**

3

**CM554 - NEW MEDIA WRITING & RHETORIC****Long Course Title**

NEW MEDIA WRITING & RHETORIC

**Course Description**

This course teaches students to consider and implement rhetorical principles across a variety of media and includes an examination of communication strategies used widely in academic and industry settings. The course focuses on new media through an exploration of digital technologies and the way digital culture and new media have dramatically impacted reading, writing and research practices.

**Credits**

3

**Cross-Listed Course**

CM454 - NEW MEDIA WRITING & RHETORIC

**CM591 - THE RHETORIC OF PUBLIC MEMORY****Long Course Title**

THE RHETORIC OF PUBLIC MEMORY

**Course Description**

Historical markets, monuments, memorials, and museums all contain public memory. The focus on this class is to rhetorically examine these curated southern sites for how they interpret the past for current audiences with future implications.

**Credits**

3

**Cross-Listed Course**

CM491 - THE RHETORIC OF PUBLIC MEMORY

**CM600 - INTERNSHIP****Long Course Title**

INTERNSHIP

**Course Description**

The student works in a professional capacity for at least 10 hours a week under a general supervision of a faculty member and direct supervision of a management-level practitioner in some field of professional communication (user experience, advertising, public relations, professional writing, and journalism).

**Credits**

3

**Prerequisites**

- Admitted to:  
Not Found

**CM610 - COMMUNICATION PEDAGOGY****Long Course Title**

COMMUNICATION PEDAGOGY

**Course Description**

This course is designed to prepare students for teaching in the field of communication. Toward this end, students will explore a mix of theories, methods, and strategies related to communication pedagogy. Students will also have the opportunity to develop their teaching competency by engaging in various teaching assignments.

**Credits**

3

**CM631 - ADVANCED COMMUNICATION THEORY****Long Course Title**

ADVANCED COMMUNICATION THEORY

**Course Description**

This course surveys major theories that inform the scholarly study of human communication. Through readings, discussions, and research, students learn how communication theories are developed, analyzed, evaluated, and applied. More specifically, the course goals are: 1) to enhance students' ability to critically analyze current theories of human communication, and 2) to provide students with the opportunity to actively participate in research that tests major communication theories. Original works are read.

**Credits**

3

**CM633 - INTERPERSONAL COMMUNICATION****Long Course Title**

INTERPERSONAL COMMUNICATION

**Course Description**

The art of communicating "one to one" is the focus of this course. This course surveys major theories that inform the scholarly study of interpersonal communication. Through readings, discussions, and research, we will learn how interpersonal communication theories are developed, analyzed, evaluated, and applied. More specifically, the course goals are: 1) to enhance students' ability to critically analyze current theories of interpersonal communication, 2) to provide students with the opportunity to actively participate in research that tests major interpersonal communication theories.

**Credits**

3

**CM640 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS

**Credits**

3

**CM655 - COMMUNICATION AND CULTURE****Long Course Title**

COMMUNICATION AND CULTURE

**Course Description**

This course explores the complex and dynamic relationship between communication and culture. It uses a contextual approach to examine significant similarities and distinctions between and among cultures from both macro and micro cultural perspectives, giving particular attention to how verbal and nonverbal communication moderates our cultural practices.

**Credits**

3

**CM662 - INFORMATION ARCHITECTURE****Long Course Title**

INFORMATION ARCHITECTURE

**Course Description**

This class reviews research in technical communication, information science, cognitive science, semiotics, and computer science that helps students understand how communities represent, organize, retrieve, and ultimately use information.

**Credits**

3

**CM670 - ADVANCED COMMUNICATION METHODS****Long Course Title**

ADVANCED COMMUNICATION METHODS

**Course Description**

This course is concerned with the methods and philosophy of scientific communication research. Having taken a basic course that covers elements of research design is highly recommended.

**Credits**

3

**CM675 - RHETORICAL CRITICISM****Long Course Title**

RHETORICAL CRITICISM

**Course Description**

This course examines how rhetorical scholars analyze persuasive discourse, providing hands-on opportunities for students to engage in such analyses. It examines significant variables in rhetorical processes, a number of methods employed to understand adaptations to rhetorical needs, and considers pragmatic, ethical, social and ideological dimensions of persuasive discourse.

**Credits**

3

**CM699 - MASTERS THESIS****Long Course Title**

MASTERS THESIS

**Course Description**

Required each semester during which a student is working and receiving direction on a masters thesis. No more than 6 hours credit may be applied toward the degree.

**Credits**

3 - 6

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## Computer Engineering

## **CPE211 - INTRO COMPUTER PROG FOR ENGR**

### **Long Course Title**

INTRODUCTION TO COMPUTER PROGRAMMING FOR ENGINEERING

### **Course Description**

Advanced programming in a high level language such as C++ with an emphasis on practice in solving engineering problems using top-down design and algorithms.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

### **Corequisites**

- Concurrently enrolled in:
  - CPE211L - LABORATORY

## **CPE211L - LABORATORY**

### **Long Course Title**

LABORATORY

### **Course Description**

This lab is the 0-credit lab component of the 3 credit course.

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)

## **CPE212 - FUNDAMENTALS SOFTWARE ENGRG**

### **Long Course Title**

FUNDAMENTALS - SOFTWARE ENGINEERING

### **Course Description**

Introduction to structured programming using C++. Search and sort algorithms. Introduction to data structures. Applications to engineering related problems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)



## **CPE221 - COMPUTER ORGANIZATION**

### **Long Course Title**

COMPUTER ORGANIZATION

### **Course Description**

Functional organization of stored-program digital computers including number representation, assembly language programming, computer hardware, micro-operations, and control logic; microprocessor architecture.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - EE202 - INTRO DIGITAL LOGIC DSGN (3)

## **CPE322 - DIGITAL HDWR DESIGN FUNDMNTLS**

### **Long Course Title**

DIGITAL HARDWARE DESIGN FUNDAMENTALS

### **Course Description**

Advanced concepts in Boolean algebra, use of hardware description languages as a practical means to implement hybrid sequential and combinational designs, digital logic simulation, rapid prototyping techniques, and design for testability concepts. Focuses on the actual design and implementation of sizeable digital design problems using representative Computer Aided Design (CAD) tools. Laboratory required CPE 324.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CPE221 - COMPUTER ORGANIZATION (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - EE315 - INTRO ELECTRONIC ANLYS & DESGN (3)

### **Corequisites**

- Concurrently enrolled in:
  - CPE324 - ADV LOGIC DESIGN LABORATORY (1)

## **CPE323 - INTRO TO EMBEDDED COMPUTER SYS**

### **Long Course Title**

INTRODUCTION TO EMBEDDED COMPUTER SYSTEMS

### **Course Description**

Hardware and software aspects in building embedded computer systems. Includes methods to evaluate design tradeoffs of different technology choices and technology capabilities and limitations of system components necessary to design and implement an embedded system and interface it to the outside world.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE221 - COMPUTER ORGANIZATION (3)

### **Corequisites**

- Concurrently enrolled in:
  - CPE325 - EMBEDDED SYSTEMS LAB (1)

## **CPE324 - ADV LOGIC DESIGN LABORATORY**

### **Long Course Title**

ADVANCED LOGIC DESIGN LABORATORY

### **Course Description**

This course includes experimentation of fundamental concepts in digital logic design. Use of hardware description languages as a practical means to implement hybrid sequential and combinational digital designs, digital logic simulation, and rapid prototyping techniques. Corequisite laboratory component of CPE 322

### **Credits**

1

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - CPE322 - DIGITAL HDWR DESIGN FUNDMNTLS (3)

## **CPE325 - EMBEDDED SYSTEMS LAB**

### **Long Course Title**

EMBEDDED SYSTEMS LABORATORY

### **Course Description**

Student gain experience working with modern integrated software development environments and hardware platforms to solve practical problems. Corequisite laboratory component of CPE 323

### **Credits**

1

### **Corequisites**

- Concurrently enrolled in:
  - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)

## **CPE348 - INTRO TO COMPUTER NETWORKS**

### **Long Course Title**

INTRODUCTION TO COMPUTER NETWORKS

### **Course Description**

Introduction to the concepts and architecture of computer networks. Review of communication protocols using the Internet and the TCP/IP model as major examples. High-speed networking, congestion control, data compression, security and distributed processing.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
  - CPE221 - COMPUTER ORGANIZATION (3)

## **CPE353 - SOFTWARE DESIGN & ENGINEERING**

### **Long Course Title**

SOFTWARE DESIGN & ENGINEERING

### **Course Description**

Hands-on experience developing a substantial software project using software design tools such as SQL database system and the Qt graphical interface development environment. Introduction to a software process including requirements elicitation and testing techniques.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

## **CPE381 - FUND SIGNALS & SYS FOR COMP EN**

### **Long Course Title**

FUNDAMENTALS OF SIGNALS AND SYSTEMS FOR COMPUTER ENGINEERING

### **Course Description**

Introduction to the fundamental concepts in continuous and discrete signals and systems, and methods of signal and system analysis for computer engineers. No credit for EE or OPE students.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSCPE ENG
  - Earn a minimum grade of C- in all of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

**CPE412 - INTRO TO PARALLEL PROGRAMMING****Long Course Title**

INTRODUCTION TO PARALLEL PROGRAMMING

**Course Description**

Introduction to processing in parallel and distributed computing environments. Design and analysis of parallel algorithms. Parallel programming environments: Pthreads for shared memory multiprocessor systems, and PVM/MPI for distributed networked computers.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

**Cross-Listed Course**

CPE512 - INTRO TO PARALLEL PROGRAMMING

**CPE423 - HARDWARE/SOFTWARE CO-DESIGN****Long Course Title**

HARDWARE/SOFTWARE CO-DESIGN

**Course Description**

Study and design of Systems On A Chip (SOC). Emphasis on Field Programmable realizations of SOC systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CPE322 - DIGITAL HDWR DESIGN FUNDMNTLS (3)
  - CPE426 - VLSI HARDWARE DESC LANG/MODL/S (3)

**Cross-Listed Course**

CPE523 - HARDWARE/SOFTWARE CO-DESIGN

**CPE426 - VLSI HARDWARE DESC LANG/MODL/S****Long Course Title**

VLSI HARDWARE DESC LANG/MODL/S

**Course Description**

Modern VLSI design techniques and tools, such as silicon compilers, (V)HDL modeling languages, placement and routing tools, synthesis tools, and simulators. Students will design, simulate, and layout using both programmable logic families and ASIC libraries.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EE315 - INTRO ELECTRONIC ANLYS & DESGN (3)

**Cross-Listed Course**

CPE526 - VLSI HARDWARE DESC LANG/MODL/S

**CPE427 - VLSI DESIGN I****Long Course Title**

VLSI DESIGN I

**Course Description**

Introduction to VLSI design using CAD tools, CMOS logic, switch level modeling, circuit characterization, logic design in CMOS, systems design methods, test subsystem design, design examples, student design project. Laboratory required CPE 427L.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EE315 - INTRO ELECTRONIC ANLYS & DESGN (3)

**Corequisites**

- Concurrently enrolled in:
  - CPE427L - LABORATORY

**Cross-Listed Course**

CPE527 - VLSI DESIGN I

**CPE427L - LABORATORY****Long Course Title**

LABORATORY

**Course Description**

Students enrolling in CPE 427L must enroll concurrently in CPE 427.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CPE427 - VLSI DESIGN I (3)

**Cross-Listed Course**

CPE527L - LABORATORY

**CPE431 - INTRO COMPUTER ARCHITECTURE****Long Course Title**

INTRODUCTION: COMPUTER ARCHITECTURE

**Course Description**

Study of existing computer structures. Computer organization with emphasis on busing systems, storage systems, and instruction sets. Performance models and measures, pipelining, cache and virtual memory, introduction to parallel processing.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE322 - DIGITAL HDWR DESIGN FUNDMNTLS (3)
  - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)

**Cross-Listed Course**

CPE531 - INTRO COMPUTER ARCHITECTURE

**CPE434 - OPERATING SYSTEMS****Long Course Title**

OPERATING SYSTEMS

**Course Description**

Study of the fundamentals of operating systems. Emphasis on processes, file management, interprocess communication, input-output, virtual memory, networking and security. Course must be taken concurrently with CPE 435.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE221 - COMPUTER ORGANIZATION (3)
  - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)

**Corequisites**

- Concurrently enrolled in:
  - CPE435 - OPERATING SYSTEMS LABORATORY (1)

**Cross-Listed Course**

CPE534 - OPERATING SYSTEMS

**CPE435 - OPERATING SYSTEMS LABORATORY****Long Course Title**

OPERATING SYSTEMS LABORATORY

**Course Description**

Laboratory component of Operating Systems course. Experiments include implementation of device drivers, process and thread management, virtual memory management, dynamic memory management, file-systems. Students must take this course concurrently with CPE 434.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - CPE434 - OPERATING SYSTEMS (3)

**CPE436 - INTERNALS OF MODERN OPER SYS****Long Course Title**

INTERNALS OF MODERN OPERATING SYSTEMS

**Course Description**

In-depth study of the design of modern operating systems such as Unix, NT and Linux. Emphasis on the internals and implementation details of interrupt processing, real-time clocks, device independent I/O, process management, memory management, file management.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE434 - OPERATING SYSTEMS (3)

**Cross-Listed Course**

CPE536 - INTERNALS OF MODERN OPER SYS

**CPE449 - INTRO TO CYBERSECURITY ENGINEER****Long Course Title**

INTRODUCTION TO CYBERSECURITY ENGINEERING

**Course Description**

Introduction to cryptography and computer security through hardware and physical security to a knowledge of audit methods, security management, and public law. Includes skills such as business process analysis, software security, IAE evaluation, and IAE testing.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)

**Equivalent Course(s)**

CS485 - INTRO CYBERSECURITY ENGR

**Cross-Listed Course**

CPE549 - INTRO TO CYBERSECURITY ENGINEER



## **CPE455 - SECURE SOFTWARE DEVELOPMENT**

### **Long Course Title**

SECURE SOFTWARE DEVELOPMENT

### **Course Description**

Overview of methodologies for development of high-assurance software. Major topics include analysis of security and safety risks, software certification criteria, the software development lifecycle, risk mitigation, design and coding best practices, verification techniques, and auditing of software for insecure and unsafe coding constructs.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)

### **Cross-Listed Course**

CPE555 - SECURE SOFTWARE DEV

## **CPE457 - SOFTWARE REVERSE ENGINEERING**

### **Long Course Title**

SOFTWARE REVERSE ENGINEERING

### **Course Description**

This course provides fundamental knowledge of software reverse engineering. The course provides the ability (a) to understand software of unknown origin or software for which source code is unavailable, (b) to determine how something works, (c) to discover data used by software, and (d) to aid in the analysis of software. The course introduces tools for reverse engineering, including disassemblers, debuggers, monitors, virtual machines and modern tools for software analysis.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
  - CS307 - OBJECT ORIENT/PROG C++ (3)

### **Cross-Listed Course**

CPE557 - SOFTWARE REVERSE ENGR

**CPE459 - SYSTEMS SECURITY****Long Course Title**

SYSTEMS SECURITY

**Course Description**

This course (1) introduces cyber physical, industrial control, embedded, and Supervisory Control and Data Acquisition (SCADA) control systems, (2) examines common vulnerabilities and threats associated with these systems, and (3) examine techniques to defend these systems from cyber-attacks.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)
  - CPE449 - INTRO TO CYBERSECURITY ENGINRG (3)

**Cross-Listed Course**

CPE559 - SYSTEMS SECURITY

**CPE488 - CYBERSECURITY ENG CAPSTONE I****Long Course Title**

CYBERSECURITY ENGINEERING CAPSTONE I

**Course Description**

Students will participate in a team based cybersecurity project which is a culminating experience for the cybersecurity degree. For a target system, students teams will conduct and document a risk assessment, then design, implement, and test cybersecurity controls to mitigate threats to the system.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - CPE449 - INTRO TO CYBERSECURITY ENGINRG (3)
    - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
    - CS465 - NETWORK SECURITY (3)

**CPE490 - SPECIAL TOPICS IN COMP ENGR****Long Course Title**

SPECIAL TOPICS IN COMPUTER ENGINEERING

**Course Description**

Topics will vary. The course may be repeated when topics vary. Consent of advisor.

**Credits**

1 - 3

**Cross-Listed Course**

CPE590 - SPECIAL TOPICS IN COMP ENGR

**CPE490L - SPECIAL TOPICS LABORATORY****Long Course Title**

SPECIAL TOPICS LABORATORY

**Course Description**

Complements material for CPE 490

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CPE490 - SPECIAL TOPICS IN COMP ENGR (1 - 3)

**Cross-Listed Course**

CPE590L - SELECTED TOPICS LABORATORY

**CPE495 - COMPUTER ENGINEERING DESIGN I****Long Course Title**

COMPUTER ENGINEERING DESIGN I

**Course Description**

First course in the senior capstone design sequence. Application of techniques to the design of electronic systems that have digital hardware and software components. Application of engineering courses to solve real-world design problems. Must be taken in the same academic year as CPE 496.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Earn a minimum grade of C- in all of the following:
    - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
    - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
    - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)

**CPE496 - COMPUTER ENGINEERING DESIGN II****Long Course Title**

COMPUTER ENGINEERING DESIGN II

**Course Description**

Second course in the senior capstone design sequence. Must be taken in the same academic year as CPE 495.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE495 - COMPUTER ENGINEERING DESIGN I (3)

**CPE497 - COMPUTER ENGR INTERNSHIP****Long Course Title**

COMPUTER ENGINEERING INTERNSHIP

**Course Description**

Active involvement in an engineering project in an engineering enterprise, professional organization, or government agency that has particular interest and relevance to the student. Junior/senior standing and approval from Engineering Faculty advisor.

**Credits**

1 - 3

**Prerequisites**

- Complete all of the following
  - Instructor Permission Required
  - Must have a class standing of Junior
  - Must have a class standing of Senior

**CPE498 - CYBERSECY ENGR CAPSTONE II****Long Course Title**

CYBERSECURITY ENGINEERING CAPSTONE II

**Course Description**

Students will participate in a team based cybersecurity project which is a culminating experience for the cybersecurity degree. For a target system, student teams will conduct and document a risk assessment, then design, implement, and test cybersecurity controls to mitigate threats to the system.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE488 - CYBERSECURITY ENG CAPSTONE I (3)
  - IS450 - CYBERSECURITY MANAGEMENT (3)

**CPE499 - PROJECT IN COMPUTER ENGRG****Long Course Title**

PROJECT IN COMPUTER ENGINEERING

**Course Description**

Individual design project under the direction of an ECE faculty member. Senior standing and permission of instructor required.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Instructor Permission Required

**CPE512 - INTRO TO PARALLEL PROGRAMMING****Long Course Title**

INTRODUCTION TO PARALLEL PROGRAMMING

**Course Description**

Introduction to processing in parallel and distributed computing environments. General concepts of parallel machine models, processes, mutual exclusion, process synchronization, message passing, and programming languages for parallel computing and scheduling. Design and analysis of parallel algorithms. Parallel programming environments: Pthreads for shared memory multiprocessor systems and PVM/MPI for distributed networked computers.

**Credits**

3

**Cross-Listed Course**

CPE412 - INTRO TO PARALLEL PROGRAMMING

**CPE523 - HARDWARE/SOFTWARE CO-DESIGN****Long Course Title**

HARDWARE/SOFTWARE CO-DESIGN

**Course Description**

Study and design of Systems On a Chip (SOC). Emphasis on Field Programmable realizations of SOC systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE526 - VLSI HARDWARE DESC LANG/MODL/S (3)

**Cross-Listed Course**

CPE423 - HARDWARE/SOFTWARE CO-DESIGN

**CPE526 - VLSI HARDWARE DESC LANG/MODL/S****Long Course Title**

VLSI HARDWARE DESC LANG/MODL/S

**Course Description**

Modern VLSI design techniques and tools, such as silicon compilers, (V)HDL modeling languages, placement and routing tools, synthesis tools, and simulators. Students will design, simulate, and layout using both programmable logic families and ASIC libraries.

**Credits**

3

**Cross-Listed Course**

CPE426 - VLSI HARDWARE DESC LANG/MODL/S

**CPE527 - VLSI DESIGN I****Long Course Title**

VLSI DESIGN I

**Course Description**

Introduction to VLSI design using CAD tools, CMOS logic, switch level modeling, circuit characterization, logic design in CMOS, systems design methods, test subsystem design, design examples, and student design project. Design project to be fabricated and tested in CPE 528. Students enrolling in CPE 527 must enroll concurrently in CPE 527L

**Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - CPE527L - LABORATORY

**Cross-Listed Course**

CPE427 - VLSI DESIGN I

**CPE527L - LABORATORY****Long Course Title**

CPE 527 LABORATORY

**Course Description**

Students enrolling in CPE 527L must enroll concurrently in CPE 527.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CPE527 - VLSI DESIGN I (3)

**Cross-Listed Course**

CPE427L - LABORATORY

**CPE531 - INTRO COMPUTER ARCHITECTURE****Long Course Title**

INTRODUCTION TO COMPUTER ARCHITECTURE

**Course Description**

Existing computer structures. Computer organization with emphasis on busing systems, storage systems, and instruction sets. Special purpose architecture, performance models and measures, VLSI influence on architecture.

**Credits**

3

**Cross-Listed Course**

CPE431 - INTRO COMPUTER ARCHITECTURE

**CPE534 - OPERATING SYSTEMS****Long Course Title**

OPERATING SYSTEMS

**Course Description**

Study of the fundamentals of operating systems. Emphasis on processes, file management, interprocess communication, input-output, virtual memory, networking and security.

**Credits**

3

**CPE536 - INTERNALS OF MODERN OPER SYS****Long Course Title**

INTERNALS OF MODERN OPERATING SYSTEMS

**Course Description**

In depth study of the design of modern operating systems such as Unix, NT, and Linux. Emphasis on the internals and implementation details of interrupt processing, real-time clocks, device independent I/O, process management, memory management, and file management.

**Credits**

3

**Cross-Listed Course**

CPE436 - INTERNALS OF MODERN OPER SYS

**CPE549 - INTRO TO CYBERSECURITY ENGINEERING****Long Course Title**

INTRODUCTION TO CYBERSECURITY ENGINEERING

**Course Description**

Introduction to cryptography and computer security through hardware and physical security to a knowledge of audit methods, security management, and public law. The course will introduce security engineering skills such as business process analysis, software security, IAE evaluation, and IAE testing. No credit for students who have taken CPE 449 or CS 485.

**Credits**

3

**Equivalent Course(s)**

CS585 - INTRO CYBERSECURITY ENGR

**Cross-Listed Course**

CPE449 - INTRO TO CYBERSECURITY ENGINEERING

**CPE555 - SECURE SOFTWARE DEV****Long Course Title**

SECURE SOFTWARE DEVELOPMENT

**Course Description**

Overview of methodologies for development of high-assurance software. Major topics include analysis of security and safety risks, software certification criteria, the software development lifecycle, risk mitigation, design and coding best practices, verification techniques, and auditing of software for insecure and unsafe coding constructs.

**Credits**

3

**Cross-Listed Course**

CPE455 - SECURE SOFTWARE DEVELOPMENT

**CPE557 - SOFTWARE REVERSE ENGR****Long Course Title**

SOFTWARE REVERSE ENGINEERING

**Course Description**

This course provides fundamental knowledge of software reverse engineering. The course provides the ability (a) to understand software of unknown origin or software for which source code is unavailable, (b) to determine how something works, (c) to discover data used by software, and (d) to aid in the analysis of software. The course introduces tools for reverse engineering, including disassemblers, debuggers, monitors, virtual machines and modern tools for software analysis.

**Credits**

3

**Cross-Listed Course**

CPE457 - SOFTWARE REVERSE ENGINEERING

**CPE559 - SYSTEMS SECURITY****Long Course Title**

SYSTEMS SECURITY

**Course Description**

This course (1) introduces cyber physical, industrial control, embedded and Supervisory Control and Data Acquisition (SCADA) control systems, (2) examines common vulnerabilities and threats associated with these systems, and (3) examines techniques to defend these systems from cyber-attacks.

**Credits**

3

**Cross-Listed Course**

CPE459 - SYSTEMS SECURITY



**CPE561 - TRANSLATION SYSTEMS****Long Course Title**

TRANSLATION SYSTEMS

**Course Description**

Grammars, parsers, and lexical analyzers; implementation of translators via top-down and bottom up techniques; grammar analysis to identify ambiguities. Practical applications of translators including conversion of file formats and compilation of traditional computer languages.

**Credits**

3

**CPE590 - SPECIAL TOPICS IN COMP ENGR****Long Course Title**

SPECIAL TOPICS IN COMPUTER ENGINEERING

**Credits**

1 - 3

**CPE590L - SELECTED TOPICS LABORATORY****Long Course Title**

SELECTED TOPICS LABORATORY

**Course Description**

Complements material for CPE 590

**Credits**

0

**CPE610 - SELECTED TOPICS IN COMPUTER EN****Long Course Title**

SELECTED TOPICS IN COMPUTER ENGINEERING

**Credits**

1 - 6

**Equivalent Course(s)**

EE610 - SELECTED TOPICS/ECE

**CPE612 - PARALLEL ALGORITHMS****Long Course Title**

PARALLEL ALGORITHMS

**Course Description**

Introduction to metrics describing the performance and scalability of parallel algorithms. Performance analysis of parallel algorithms for performing sorting, matrix multiplication, solving linear equations, and FFT.

**Credits**

3

## **CPE613 - GEN PURPOSE GPU COMPUTING**

### **Long Course Title**

GENERAL PURPOSE GPU COMPUTING

### **Course Description**

The focus of this course is to introduce emerging techniques and programming paradigms that can be used to accelerate the processing speed of scientific and other high performance applications using Graphics Processing Units, GPUs. GPUs represent low-cost highly parallel video processing hardware that can be programmed for general purpose applications using UDA/OpenCL software architecture. The course will survey the current state of research and industrial activity and will give student's hands-on experience implementing design applications on real-world GPU facilities for a wide range of scientific applications.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE512 - INTRO TO PARALLEL PROGRAMMING (3)

## **CPE619 - MODELING & ANAL COMPU/COMMUN S**

### **Long Course Title**

MODELING & ANALYSIS OF COMPUTING/COMMUNICATION SYSTEMS

### **Course Description**

Modeling of single and multiprocessor systems, single and multi-stage interconnection networks, Computer Networks. Analysis using Stochastic processes, Markov and Queuing techniques. Modeling using Petri Nets and Finite State models.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA585 - PROBABILITY (3)

## **CPE621 - ADVANCED EMBEDDED SYSTEMS**

### **Long Course Title**

ADVANCED EMBEDDED SYSTEMS

### **Course Description**

Deeply embedded low-power wireless sensors. Low-power microcontroller architectures, sensor platform architecture, wireless intelligent sensors, low power wireless communication standards, battery powered systems, resource constrained operating systems, data aggregation/sensor synergy, and collaborative signal processing.

### **Credits**

3

**CPE625 - CMOS ANALOG CIRCUIT DESIGN****Long Course Title**

CMOS ANALOG CIRCUIT DESIGN

**Course Description**

Analog circuit design in CMOS technology. CMOS processing technology. MOS transistor modeling. Basic current mirrors and single-stage amplifiers. Noise analysis and modeling. Basic OPAMP design and compensation. Advanced current mirrors and OPAMPS. Bandgap references. Oscillators. CMOS technology characterization for radio-frequency (RF) design.

**Credits**

3

**Equivalent Course(s)**

EE620 - CMOS ANALOG CIRCUIT DESIGN

**CPE631 - ADV COMP SYSTEMS ARCHITECTURE****Long Course Title**

ADVANCED COMPUTER SYSTEMS ARCHITECTURE

**Course Description**

Study of architectural features of modern processors, including cache memories and memory systems, pipeline designs, branch prediction techniques. Design of superscalar, multithreaded VLIW processors, code optimization for such systems will be studied. Quantitative evaluation of architectural features are emphasized throughout the course.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE512 - INTRO TO PARALLEL PROGRAMMING (3)
  - CPE531 - INTRO COMPUTER ARCHITECTURE (3)

**CPE633 - FAULT-TOLERANT COMPUTING SYS****Long Course Title**

FAULT-TOLERANT COMPUTING SYSTEMS

**Course Description**

Analysis and design of very high reliability and availability systems. Fault types, reliability techniques, and maintenance techniques. Case studies of high-availability long-life, life-critical systems. Both hardware and software techniques for achieving fault-tolerance will be studied.

**Credits**

3

**CPE645 - APPLIED CRYPTOGRAPHY****Long Course Title**

APPLIED CRYPTOGRAPHY

**Course Description**

Principles and concepts of computer network security. Introduction to cryptography, confidentiality, authentication, digital signatures, E-mail security, IP security, web security, intruders, malicious software, firewall, and other network security-related issues.

**Credits**

3

**Equivalent Course(s)**

CS685 - APPLIED CRYPTOGRAPHY

**CPE646 - WIRELESS SENSOR NETWORKS****Long Course Title**

WIRELESS SENSOR NETWORKS

**Course Description**

High-level issues in mobile and wireless networks. The main topics are mobile IP, mobile Ad hoc NETWORKS (MANETS) wireless sensor networks, wireless LAN, Bluetooth, cellular networks, satellite systems and security issues in mobiles and wireless networks.

**Credits**

3

**Equivalent Course(s)**

CS670 - WIRELESS SENSOR NETWORKS

**CPE647 - UBIQUITOUS COMPUTING****Long Course Title**

UBIQUITOUS COMPUTING

**Course Description**

The course is based on the new "anytime, anywhere" computing paradigm, also known as ubiquitous computing. This course is project oriented, and explores issues of mobile, wireless, and distributed computing in Internet environment, advanced human-computer interfaces, and power efficient computing.

**Credits**

3

**CPE648 - ADVANCED COMPUTER NETWORKS****Long Course Title**

ADVANCED COMPUTER NETWORKS

**Course Description**

Advanced principles and concepts of general-purpose computer networks, with a special emphasis to internetworking and Internet. Transport and higher level protocols emphasis. Programming issues. High-speed networking, congestion control, data compression, security and distributed processing will be covered.

**Credits**

3

**CPE649 - ADV CYBERSECURITY ENGINEERING****Long Course Title**

ADVANCED CYBERSECURITY ENGINEERING

**Course Description**

Introduction to topics ranging from how to attack computer systems and networks to how to protect and recover from attacks on computer systems and networks. Basic process utilized by computer attackers in order to develop a complete understanding and appreciation of the threat to information assurance. Process of detecting, preventing, and recovering from information assurance attacks. Intrusion Detection and Prevention Systems, Auditing, Security Vulnerability Assessments, and the Incident Response process.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE549 - INTRO TO CYBERSECURITY ENGINEERING (3)

**Corequisites**

- Concurrently enrolled in:
  - CPE649L - ADV CYBERSECURITY ENGINEERING LAB

**CPE649L - ADV CYBERSECURITY ENGINEERING LAB****Long Course Title**

ADVANCED CYBERSECURITY ENGINEERING LABORATORY

**Course Description**

Students enrolling CPE 649 must enroll concurrently in CPE 649L.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CPE649 - ADV CYBERSECURITY ENGINEERING (3)

**CPE656 - SOFTWARE ENGRG STUDIO I****Long Course Title**

SOFTWARE ENGINEERING STUDIO I

**Course Description**

This is the first course in a two course studio series required for the MSSE degree in the College of Engineering. Students will work in small design teams on medium sized software projects. Activities include developing requirements, designing and constructing system prototypes, developing and implementing test and verification plans, and presenting the project for evaluation. The practice of software design and evaluation will be conducted in an iterative cycle using best software engineering practices, so that design and execution can be refined over the lifecycle of the project.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS650 - SOFT'W ENGINEERING PROC (3)

**CPE657 - SOFTWARE STUDIO****Long Course Title**

GRADUATE SOFTWARE STUDIO

**Course Description**

Graduate software studio is a capstone course in the MSSE program which requires students to present mastery of software development through completion of an extensive software project which follows a defined process. Students work in collaborative teams which will require extensive collaboration outside of class through meetings, teleconferencing, and documentation.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Instructor Permission Required
  - Earn a minimum grade of C- in all of the following:
    - CS650 - SOFT'W ENGINEERING PROC (3)

**CPE690 - SELECTED TOPICS COMPUTER ENGRG****Long Course Title**

SELECTED TOPICS COMPUTER ENGINEERING

**Credits**

1 - 6

**CPE692 - CYBERSECURITY CAPSTONE****Long Course Title**

CYBERSECURITY CAPSTONE

**Course Description**

A capstone course emphasizing the integration of various principles, theories, and techniques for developing, implementing and using cybersecurity strategies and applications in organizations. Includes readings, lectures, tours, situation analysis, cases, and the completion of a major practical project. Normally taken in the last semester of a student's program. Minimum grade B required.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
  - CS585 - INTRO CYBERSECURITY ENGR (3)
  - IS660 - CYBERSECURITY MANAGEMENT (3)
  - IS663 - COMPUTER FORENSICS (3)

**CPE695 - PROJECTS IN COMPUTER ENGRG****Long Course Title**

PROJECTS IN COMPUTER ENGINEERING

**Credits**

3

**CPE699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for M.S.E. students. A maximum of 9 hours credit is awarded upon successful completion of master's thesis. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

**CPE710 - SEL TOPICS IN PARALLEL PROC****Long Course Title**

SELECT TOPICS IN PARALLEL PROCESS

**Credits**

3

**CPE715 - SELECTED TOPICS IN COMPUTAT TH****Credits**

3

**CPE720 - SELECTED TOPICS IN VLSI DESIGN****Long Course Title**

SELECTED TOPICS IN VLSI DESIGN

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - Course Not Found

**CPE730 - SELECTED TOPICS IN COMPUTER SY****Long Course Title**

SELECTED TOPICS IN COMPUTER SYSTEMS

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE631 - ADV COMP SYSTEMS ARCHITECTURE (3)

**CPE735 - SELECTED TOPICS IN OPERATING S****Long Course Title**

SELECTED TOPICS IN OPERATING SYSTEMS

**Credits**

3

**CPE740 - SPEC TOPICS COMPUTER NETWORKS****Long Course Title**

SPECIAL TOPICS COMPUTER NETWORKS

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CPE648 - ADVANCED COMPUTER NETWORKS (3)

**CPE742 - PARALLEL PROCESS DESIGN****Long Course Title**

PARALLEL PROCESS DESIGN

**Credits**

3



**CPE760 - SEL TOPICS COMPILER/TRANSLAT S**  
**Credits**

3

**CPE790 - SEL TOPICS COMPUTER ENGRG**  
**Long Course Title**

SELECT TOPICS COMPUTER ENGINEERING

**Credits**

1 - 6

**CPE795 - RESEARCH IN COMPUTER ENGRG**  
**Long Course Title**

RESEARCH IN COMPUTER ENGINEERING

**Credits**

1 - 6

**CPE799 - DOCTORAL DISSERTATION**  
**Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on doctoral dissertation. The 0 hour option is only available to students who have successfully defended their dissertation and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

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## Computer Science

**CS102 - INTRO TO C PROGRAMMING**  
**Long Course Title**

INTRO TO C PROGRAMMING

**Course Description**

Introduction to program design and implementation in the C programming language, using hands-on programming assignments, class demonstrations and lectures. Problem analysis and some testing techniques. Basic program structure, and file organization.

**Credits**

3

**CS103 - INTRO PROGRAMMING USING JAVA****Long Course Title**

INTRODUCTION TO PROGRAMMING USING JAVA

**Course Description**

Introduction to program design and implementation in the Java programming language, using hands-on programming assignments, class demonstrations and lectures. Problem analysis and some testing techniques. Basic program structure, data types, control structures, methods and file organization.

**Credits**

3

**CS104 - INTRO TO CS USING PYTHON****Long Course Title**

INTRODUCTION TO COMPUTER SCIENCE USING PYTHON

**Course Description**

Introduction to program design and implementation in the Python programming language, using hands-on programming assignments, class demonstrations and lectures. Problem analysis and some testing techniques. Basic program structure, and file organization.

**Credits**

3

**CS105 - COMP SCI SEM:ETH/PROFESS****Long Course Title**

COMPUTER SCIENCE SEMINAR:ETHICS/PROFESSIONALISM

**Course Description**

Issues associated with the ethical use of computers in the information age. Ethics, professionalism, software piracy, copyrighting software, ethical standards and the impact of computers on society will be covered. Familiarization with the local computing environment will also be covered.

**Credits**

1

## **CS121 - COMPUTER SCIENCE I**

### **Long Course Title**

COMPUTER SCIENCE I

### **Course Description**

Review of problem solving techniques, algorithm development, and fundamental language features; e.g., loops, decisions. In depth coverage of functions, arrays, I/O. Principles of software design, implementation, and testing. Introduction to object oriented design and the C++ programming language.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **CS143 - INTRO TECH MULTIMEDIA & GAMING**

### **Long Course Title**

INTRODUCTION TO TECHNOLOGIES AND TOOLS FOR MULTIMEDIA & GAMING

### **Course Description**

Introduction to terminology, technologies and tools for multimedia and gaming. Elements such as text, sound, images, animation, video, and how they are represented, captured, edited, stored, and published. Overview of multimedia and gaming technologies, multimedia authoring, publishing on the web.

### **Credits**

3

## **CS196 - SPECIAL TOPICS**

### **Long Course Title**

SPECIAL TOPICS: COMPUTER SCIENCE

### **Course Description**

Course offered by an instructor in a specialized area of computer science. Must have approval of instructor.

### **Credits**

1 - 9

### **Prerequisites**

- Instructor Permission

## **CS214 - INTRO DISCRETE STRUCTURE**

### **Long Course Title**

INTRODUCTION TO DISCRETE STRUCTURES

### **Course Description**

Review of set algebra including mappings and relations. Algebraic structures including semigroups and groups. Elements of theory of directed and undirected graphs; Boolean algebra and propositional logic and applications of these structures to various areas of computer science.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS121 - COMPUTER SCIENCE I (3)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)

## **CS221 - COMP SCI II: DATA STRUCTURES**

### **Long Course Title**

COMPUTER SCIENCE II: DATA STRUCTURES

### **Course Description**

Advanced features of the C++ programming language, including pointers, recursion, classes, and inheritance. Fundamental data structures including linked lists, stacks, queues, binary search trees. Basic sort and search algorithms. Design, development, and documentation of object-oriented programs.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS121 - COMPUTER SCIENCE I (3)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)

**CS296 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS: COMPUTER SCIENCE

**Course Description**

Course offered by an instructor in a specialized area of computer science. Must have approval of instructor.

**Credits**

1 - 9

**Prerequisites**

- Instructor Permission

**CS300 - INTERNSHIP IN COMPUTER SCIENCE****Long Course Title**

INTERNSHIP IN COMPUTER SCIENCE

**Course Description**

Practical workplace experience allows student to apply principles and skills learned in CS courses. Arranged by student with consent of the chair, student submits regular reports to course instructor, and workplace supervisor evaluates students' performance.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: BS COMP SCI
  - Must have a class standing of Junior or higher

**CS307 - OBJECT ORIENT/PROG C++****Long Course Title**

OBJECT ORIENTED DESIGN/PROGRAMMING C++

**Course Description**

Emphasis on principles of software engineering and object-oriented design. Practical experience using the standard C++ library, the standard template library, and design patterns. Introduction to and experience with graphical user interface applications.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)

## **CS308 - ASSEMBLY LANGUAGE PROGRAMMING**

### **Long Course Title**

ASSEMBLY LANGUAGE PROGRAMMING

### **Course Description**

Programming in a representative assembly language, including floating point programming. Overview of software systems: loaders, assemblers, compiler, interpreters, operating systems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS309 - COMPUTER ORG & SWITCHNG THRY (3)

## **CS309 - COMPUTER ORG & SWITCHNG THRY**

### **Long Course Title**

COMPUTER ORGANIZATION & SWITCHING THEORY

### **Course Description**

Boolean algebra, Boolean function minimization techniques, design and analysis of combinational circuits, design and analysis of sequential circuits. Computer hardware organization, including CPU, instruction representation and executive. Programming in a representative assembly language, including floating point programming. Overview of software systems: loaders, assembler, compiler, interpreters, operating systems. A lab section must be scheduled for this course.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS214 - INTRO DISCRETE STRUCTURE (3)
  - CS221 - COMP SCI II: DATA STRUCTURES (3)

### **Corequisites**

- Concurrently enrolled in:
  - CS309L - LABORATORY

## **CS309L - LABORATORY**

### **Long Course Title**

LABORATORY FOR CS309

### **Course Description**

Lecture/Lab. Students enrolling in CS 309L must enroll concurrently in CS 309.

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - CS309 - COMPUTER ORG & SWITCHNG THRY (3)

## **CS317 - INTRO DESIGN/ANALYSIS OF ALG**

### **Long Course Title**

INTRODUCTION TO DESIGN/ANALYSIS OF ALGORITHMS

### **Course Description**

Introduction to complexity analysis of algorithms; emphasis on searching, sorting, finding spanning trees and shortest paths in graphs. Design techniques such as divide & conquer, dynamic programming, and backtracking. Introduction to problem classification; i.e. NP, intractable, and unsolvable.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - Earn a minimum grade of C- in all of the following:
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - MA172 - CALCULUS II (4)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)

## **CS321 - INTRO OBJECT-ORIENTED PROG JAV**

### **Long Course Title**

INTRODUCTION TO OBJECT-ORIENTED PROGRAMS IN JAVA

### **Course Description**

Writing substantial object-oriented programs in Java, including design, documentation and testing. Advanced data structures (e.g., balanced trees, hash tables). Graphical interface programming using the Java abstract windowing toolkit. Comparison with other object-oriented languages, notably C++.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)

## **CS322 - COMPETITION INTS PROB SOLVING**

### **Long Course Title**

COMPETITION INTENSIVE PROBLEM SOLVING

### **Course Description**

This course provides intensive practice in solving different kinds of problems, under an instructor's guidance, in an environment similar to that of Computer Science competitions. Intensive programming and intensive use of many kinds of computing knowledge.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

## **CS330 - ARTFCL INTEL & GAME DEV**

### **Long Course Title**

ARTIFICIAL INTELLIGENCE & GAME DEVELOPMENT

### **Course Description**

Techniques and concepts of artificial intelligence applied game development and production. Topics: path planning, decision making, tactics, and non-rational behaviors.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

## **CS347 - INTRO VIDEO GAME DESGN & PROGM**

### **Long Course Title**

INTRODUCTION TO VIDEO GAME DESIGN & PROGRAMMING

### **Course Description**

Provides students with an overview of the video game production process. Covers both theory and practice of game design and programming. Students produce 2D and 3D games from beginning to end using existing game engines. Hands-on focus and project-oriented. CS 143 is highly recommended.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)



## **CS370 - INTRO COMPUTER NETWORKS**

### **Long Course Title**

INTRODUCTION TO COMPUTER NETWORKS

### **Course Description**

Introduction to the organization and operation of computer networks. Physical, Data Link, Network, Transport, and Application-layer protocols and algorithms; LAN and WAN systems; TCP/IP; wired and wireless organizations; security approaches.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS309 - COMPUTER ORG & SWITCHNG THRY (3)

## **CS371 - MOBILE COMPUTING APP INCT & D**

### **Long Course Title**

MOBILE COMPUTING APPLICATIONS INCT & D

### **Course Description**

Considers application design for the mobile space with emphasis on mobile computer interfaces, including GUI for mobile environments, entertainment computing, and cross-platform development. This course is also a component of the Entertainment Computing Track.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)

## **CS390 - UNIX/LINUX PROGRAMMING**

### **Long Course Title**

UNIX/LINUX PROGRAMMING

### **Course Description**

Design and development of systems and programs in the UNIX environment. File and terminal I/O, processes, inter-process communication, signals. Pattern searching, filters, pipes. Shell programming. Program and system development tools such as awk, C, make, sed, and yacc.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)

**CS391 - INT NETWORK ADMIN PRINC WINDOW****Long Course Title**

INTRO TO NETWORK ADMIN PRINCIPLES FOR WINDOWS

**Course Description**

Network administration principles for installing and administering Windows networks. OS installation, general network topologies and protocols, and Windows client-server architecture. User management, network file and security systems, and disaster-recovery are also covered.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)

**CS392 - INT NETWORK ADMIN PRINC FOR UN****Long Course Title**

INTRO TO NETWORK ADMIN PRINCIPLES FOR UNIX

**Course Description**

Linux OS installation, network topologies and protocols, and UNIX client-server architecture. User management, network file and security systems, kernel configuration, print servers, domain name service, mail servers, Web and ftp servers are included. Design and implementation of a UNIX domain.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS390 - UNIX/LINUX PROGRAMMING (3)

**CS396 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS: COMPUTER SCIENCE

**Course Description**

Course offered by an instructor in a specialized area of computer science. Must have approval of instructor.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS403 - INT FORML LANG AUTO THRY****Long Course Title**

INTRODUCTION TO FORMAL LANGUAGES AND AUTOMATA THEORY

**Course Description**

Introduction to concepts and formalisms of formal languages and automata theory. Includes fundamental mathematical concepts, grammars and corresponding automata, and deterministic parsing of programming languages.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

**CS413 - INTRO DIGITAL COMP ARCHITECTUR****Long Course Title**

INTRODUCTION TO DIGITAL COMPUTER ARCHITECTURE

**Course Description**

Design of computer systems and subsystems, including register transfer, bus structure, timing and control. Pipelining, memory systems including cache and cache coherence, arithmetic, and I/O units. Interrupt handling. A lab section must be scheduled for this course.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS309 - COMPUTER ORG & SWITCHNG THRY (3)

**Corequisites**

- Concurrently enrolled in:
  - CS413L - LABORATORY

**CS413L - LABORATORY****Long Course Title**

LABORATORY FOR CS413

**Course Description**

Lecture/Lab. Students enrolling in CS 413L must enroll concurrently in CS 413.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)

**CS424 - PRINCIPLES PROGRAMMING LANG****Long Course Title**

PRINCIPLES OF PROGRAMMING LANGUAGES

**Course Description**

Comparison of principles and paradigms of modern programming languages. How different programming languages implement lexical, syntax, and semantic analysis, including the design of compilers. Formal grammars, BNF notation, parse trees, and abstract data types.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

**Cross-Listed Course**

CS524 - PRINCIPLES PROGRAMMING LANG

**CS430 - SURVEY ARTIFICIAL INTELLIGENCE****Long Course Title**

SURVEY OF ARTIFICIAL INTELLIGENCE (AI)

**Course Description**

Survey of Artificial Intelligence (AI). AI crosses many disciplines, to make computational systems behave intelligently. This course provides a broad intro of AI sub-domains, including search, knowledge representation, reasoning, and machine learning.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

**Cross-Listed Course**

CS530 - SURVEY ARTIFICIAL INTELLIGENCE

**CS443 - INTRO TO MULTIMEDIA SYSTEMS****Long Course Title**

INTRODUCTION TO MULTIMEDIA SYSTEMS

**Course Description**

Multimedia authoring, color models for image and video, introduction to image and video compression, digital audio, multimedia networks, multimedia synchronization, multimedia retrieval.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

**Cross-Listed Course**

CS543 - INTRO TO MULTIMEDIA SYSTEMS

**CS445 - INTRO COMPUTER GRAPHICS****Long Course Title**

INTRODUCTION TO COMPUTER GRAPHICS

**Course Description**

Introduces underlying theory and mechanics of interactive computer graphics. Basic modeling, rasterization, 2D/3D transformations, and viewing. 3D graphics rudiments. Some hardware and historical perspectives. Many programs.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

**Cross-Listed Course**

CS545 - INTRO COMPUTER GRAPHICS

## **CS446 - ADVANCED COMPUTER GRAPHICS**

### **Long Course Title**

ADVANCED COMPUTER GRAPHICS

### **Course Description**

High resolution 3D graphics. Advanced topics in viewing, vertex &, fragment processing, illumination & shading, and 3D modeling (curve & surface representation, texture mapping. Some coverage of solid modeling and color theory. Game production pipeline. Many programming projects.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS445 - INTRO COMPUTER GRAPHICS (3)
  - Must have a class standing of Junior or higher

### **Cross-Listed Course**

CS546 - ADVANCED COMPUTER GRAPHICS

## **CS453 - CLIENT/SERVER ARCHITECTURES**

### **Long Course Title**

CLIENT/SERVER ARCHITECTURES

### **Course Description**

Client/server distributed computing. Web based applications. Students will practice concepts in programs involving leading edge technologies such as AJAX, RESTful and WS-\* web services. Enterprise Java Beans, .Net. CS 370 is recommended.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS307 - OBJECT ORIENT/PROG C++ (3)
  - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)

### **Cross-Listed Course**

CS553 - CLIENT/SERVER ARCHITECTURES

## **CS454 - INTRO TO CLOUD COMPUTING**

### **Long Course Title**

INTRODUCTION TO CLOUD COMPUTING

### **Course Description**

Different cloud computing paradigms: IaaS, SaaS, PaaS. Open Source cloud software (for ex., OpenStack, CloudStack). RESTful interfaces, AWS interface. Cloud Security. Though not required as a prereq students are recommended to have taken CS 390.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS370 - INTRO COMPUTER NETWORKS (3)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)

### **Equivalent Course(s)**

### **Cross-Listed Course**

CS554 - INTRO TO CLOUD COMPUTING

## **CS465 - NETWORK SECURITY**

### **Long Course Title**

NETWORK SECURITY

### **Course Description**

Introduction to Network Security: Fundamentals of Network Security and Cryptography. Examines security at different network layers, wireless security, firewalls, intrusion detection, and penetration analysis.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS121 - COMPUTER SCIENCE I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS370 - INTRO COMPUTER NETWORKS (3)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)

### **Cross-Listed Course**

CS565 - NETWORK SECURITY

## **CS466 - OFFENSIVE SECURITY**

### **Long Course Title**

OFFENSIVE SECURITY

### **Course Description**

Theoretical and practical network and web app Penetration Testing with hands on labs for the five ethical hack phases including reconnaissance, scanning & vulnerability assessment, gaining access and exploitation, maintaining access, covering tracks. Other red-team offensive security approaches.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS370 - INTRO COMPUTER NETWORKS (3)
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)

### **Cross-Listed Course**

CS566 - OFFENSIVE SECURITY

## **CS480 - MOBILE DIGITAL FORENSICS**

### **Long Course Title**

MOBILE DIGITAL FORENSICS

### **Course Description**

This course examines digital forensics of mobile devices such as smart phones and tablets in a law enforcement context. Mobile device characteristics that make forensics examinations difficult are discussed. Various forensic tools are critically examined with an eye toward improved tool development.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
  - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)

### **Cross-Listed Course**

CS580 - MOBILE DIGITAL FORENSICS



**CS481 - MODELING & SIMULATION I****Long Course Title**

MODELING & SIMULATION I

**Course Description**

Discrete event simulation from a computer science perspective. Mathematics of probability distributions applied to simulation. Design, implementation, and application of discrete event simulation software. Application to computer and network system design.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)

**Cross-Listed Course**

CS581 - MODELING & SIMULATION I

**CS482 - MODELING & SIMULATION II****Long Course Title**

MODELING & SIMULATION II

**Course Description**

Advanced modeling methods, including Monte Carlo simulation, agent-based modeling, and mathematical modeling, from a Computer Science perspective. Emphasis on implementation, execution, and validation of working computer models using different modeling methods.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS481 - MODELING & SIMULATION I (3)

**Cross-Listed Course**

CS582 - MODELING & SIMULATION II

## **CS485 - INTRO CYBERSECURITY ENGR**

### **Long Course Title**

INTRODUCTION TO CYBERSECURITY ENGINEERING

### **Course Description**

Introduction to cryptography, computer security, security management, auditing, process analysis, software security, evaluation, and testing. Focuses on tools, processes, and methods needed to design, implement, and test systems and to adapt existing systems to survive in a hostile environment.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS370 - INTRO COMPUTER NETWORKS (3)
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)

### **Equivalent Course(s)**

CPE449 - INTRO TO CYBERSECURITY ENGINRG

### **Cross-Listed Course**

CS585 - INTRO CYBERSECURITY ENGR

## **CS487 - DATABASE SYSTEMS**

### **Course Description**

Basic concepts of database management systems with a focus on relational and object-oriented systems. Database design including semantic models and normalization. Design issues including query languages, internal storage, recovery, concurrency, security, integrity, and query optimization.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - Must have a class standing of Senior

**CS488 - INTRO TO BIG DATA COMPUTING****Long Course Title**

INTRODUCTION TO BIG DATA COMPUTING

**Course Description**

Provides big data concepts and characteristics; big data architectural concepts; big data ecosystem. Includes MapReduce framework and programming and coverage of big data applications.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

**Cross-Listed Course**

CS588 - INTRO TO BIG DATA COMPUTING

**CS490 - INTRO TO OPERATING SYSTEMS****Long Course Title**

INTRODUCTION TO OPERATING SYSTEMS

**Course Description**

Principles of operating systems. Process management, memory management, I/O management, and file systems. Specific topics include process states, threads, CPU scheduling, concurrent processing, virtual memory. Contemporary operating systems will be used as examples.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)

**CS495 - SEL TOPICS:UNDERGRAD CS****Long Course Title**

SELECT TOPICS: UNDERGRAD COMPUTER SCIENCE

**Course Description**

Individual directed study under the supervision of an instructor.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS496 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS: COMPUTER SCIENCE

**Course Description**

Course offered by an instructor in a specialized area of computer science.

**Credits**

1 - 9

**Prerequisites**

- Instructor Permission

**CS499 - SR PROJ:TEAM SOFTWARE DESIGN****Long Course Title**

SENIOR PROJECT: TEAM SOFTWARE DESIGN

**Course Description**

A combination of lectures on proven software engineering approaches, and team working sessions. Each student will participate in a sizable, complex, software development project based on a team approach. Each team will be required to provide oral and written documentation of their work.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)

## **CS513 - INTENSIVE COMP ARCH & OS**

### **Long Course Title**

INTENSIVE INTRODUCTION TO COMPUTER ARCHITECTURE & OPERATING SYSTEMS

### **Course Description**

Combinational circuits and sequential circuits. Computer hardware organization including CPU, instruction representation Assembly language. Floating point. Register transfer. Pipelining, memory systems including cache. Digital arithmetic, I/O units. Scheduling, file management, processes, threads, virtual machines, hypervisors.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA172 - CALCULUS II (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS521 - INTENSIVE INTRO PROGRAMMING (4)
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)

## **CS517 - INTENSIVE COMPUTING THEORY**

### **Long Course Title**

INTENSIVE COMPUTING THEORY

### **Course Description**

Intensive introduction to computing theory selected core topics from the undergraduate Computer Science curriculum, including Boolean algebra, digital logic, proof methods, recursion and recurrences, graphs and trees, iterative and recursive algorithms, sorting and searching algorithms, and divide- and-conquer algorithms.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA172 - CALCULUS II (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS521 - INTENSIVE INTRO PROGRAMMING (4)
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
  - Equivalency will be considered for similar courses taken at academic institutions other than UAH

## **CS521 - INTENSIVE INTRO PROGRAMMING**

### **Long Course Title**

INTENSIVE INTRODUCTION TO PROGRAMMING AND SOFTWARE ENGINEERING

### **Course Description**

A comprehensive, intensive introduction to programming, data structures, software engineering, and problem solving fundamentals. Primary language used in this course is C++, with an intro to other widely used languages, such as Java and Python.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA172 - CALCULUS II (4)
  - Equivalency will be considered for similar courses taken at academic institutions other than UAH

## **CS524 - PRINCIPLES PROGRAMMING LANG**

### **Long Course Title**

PRINCIPLES OF PROGRAMMING LANGUAGES

### **Course Description**

Comparison of principles and paradigms of modern programming languages. How different programming languages implement lexical, syntax, and semantic analysis, including the design of compilers. Formal grammars, BNF notation, parse trees, abstract data types. No credit for student who have taken CS 424.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

### **Cross-Listed Course**

CS424 - PRINCIPLES PROGRAMMING LANG

**CS526 - PROG TRANS & COMPILER CONSTR****Long Course Title**

PROG TRANS & COMPILER CONSTR

**Course Description**

Language representation; grammar classification; lexical analysis technique and tools; parsing technique and tools; compile-time and run-time symbol table design; code generation and optimization; error diagnostics. Compiler writing tools. (CS 424/CS 424 or CS 403 recommended)

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

**CS530 - SURVEY ARTIFICIAL INTELLIGENCE****Long Course Title**

SURVEY ARTIFICIAL INTELLIGENCE

**Course Description**

Survey of Artificial Intelligence (AI). AI crosses many disciplines, to make computational systems behave intelligently. This course provides a broad intro of AI sub-domains, including search, knowledge representation, reasoning, & machine learning. No credit for students who have taken CS 430.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

**Cross-Listed Course**

CS430 - SURVEY ARTIFICIAL INTELLIGENCE

**CS543 - INTRO TO MULTIMEDIA SYSTEMS****Long Course Title**

INTRODUCTION TO MULTIMEDIA SYSTEMS

**Course Description**

Multimedia authoring, color models for image and video, introduction to image and video compression, digital audio, multimedia networks, multimedia synchronization, multimedia retrieval. Students may not receive credit for both CS 443 and CS 543. CS 490 Recommended.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

**Cross-Listed Course**

CS443 - INTRO TO MULTIMEDIA SYSTEMS

**CS545 - INTRO COMPUTER GRAPHICS****Long Course Title**

INTRODUCTION TO COMPUTER GRAPHICS

**Course Description**

Introduces underlying theory and mechanics of interactive computer graphics. Basic modeling, rasterization, 2D/3D transformations, and viewing. 3D graphics rudiments. Some hardware and historical perspectives. Many programs. No credit for students who have taken CS 445.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS517 - INTENSIVE COMPUTING THEORY (4)
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)

**Cross-Listed Course**

CS445 - INTRO COMPUTER GRAPHICS



## **CS546 - ADVANCED COMPUTER GRAPHICS**

### **Long Course Title**

ADVANCED COMPUTER GRAPHICS

### **Course Description**

High resolution 3D graphics, including advanced topics in viewing, vertex processing, fragment processing, local and global illumination and shading, 3D modeling (including curve and surface representation), texture mapping, and some coverage of solid modeling and color theory. Game production pipeline. Hierarchical issues, visibility, and 3D processing algorithms may also be covered. A significant number of programming projects are involved, with some different program requirements and additional theoretical expectations for CS 546 students.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS445 - INTRO COMPUTER GRAPHICS (3)
  - CS545 - INTRO COMPUTER GRAPHICS (3)

### **Cross-Listed Course**

CS446 - ADVANCED COMPUTER GRAPHICS

## **CS548 - HUMAN-COMPUTER INTERACTION**

### **Long Course Title**

HUMAN-COMPUTER INTERACTION

### **Course Description**

Introduces underlying theory and mechanics of interactive computer graphics. Basic modeling, rasterization, 2D/3D transformations, and viewing. 3D graphics rudiments. Some hardware and historical perspectives. Many programs. Introduction to human-computer interaction and principles of graphical user interface design. Includes examination of interactive environments including windowing systems development tools, multimedia, and visual programming interfaces.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS445 - INTRO COMPUTER GRAPHICS (3)
  - CS545 - INTRO COMPUTER GRAPHICS (3)

## **CS553 - CLIENT/SERVER ARCHITECTURES**

### **Long Course Title**

CLIENT/SERVER ARCHITECTURES

### **Course Description**

Client/server distributed computing. Web based applications. Students will practice concepts in programs involving leading edge technologies such as AJAX, RESTful and WS-\* web services, Enterprise Java Beans, .NET. No credit for students who have taken CS 453

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS307 - OBJECT ORIENT/PROG C++ (3)
  - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)

### **Cross-Listed Course**

CS453 - CLIENT/SERVER ARCHITECTURES

## **CS554 - INTRO TO CLOUD COMPUTING**

### **Long Course Title**

INTRODUCTION TO CLOUD COMPUTING

### **Course Description**

Different cloud computing paradigms: IaaS, SaaS, PaaS. Open Source cloud software (for ex., OpenStack, CloudStack). RESTful interfaces, AWS interface. Cloud security. No credit for students who have taken CS 454.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS370 - INTRO COMPUTER NETWORKS (3)
    - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS560 - NETWORKING & IT INFRASTRUCTURE (3)

### **Cross-Listed Course**

CS454 - INTRO TO CLOUD COMPUTING

**CS565 - NETWORK SECURITY****Long Course Title**

NETWORK SECURITY

**Course Description**

Fundamentals of network security and cryptography. Examines security at different network layers. Wireless security. Firewalls. Intrusion detection and penetration analysis. No credit for students who have taken CS 465.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)

**Cross-Listed Course**

CS465 - NETWORK SECURITY

**CS566 - OFFENSIVE SECURITY****Long Course Title**

OFFENSIVE SECURITY

**Course Description**

Theoretical and practical network and web app Penetration Testing with hands on lab for the five ethical hack phases including reconnaissance, scanning & vulnerability assessment, gaining access and exploitation, maintaining access, covering tracks. Other red-team offensive security approaches.

**Credits**

3

**CS571 - MOBILE COMPUTING SFTWR ARC&DEV****Long Course Title**

MOBILE COMPUTING SOFTWARE ARCHITECTURE & DEVELOPMENT

**Course Description**

Considers application design for the mobile space, focusing on the fundamental requirements for mobile applications that target mobile devices. The course focus includes development, testing, distribution of mobile applications in a cross-platform environment. Emphasis also is on multimedia and entertainment computing and games. This course will also cover various issues in mobile computing from the readings from research literature such as software engineering practices, analysis of social media and general mobile analytics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)

## **CS580 - MOBILE DIGITAL FORENSICS**

### **Long Course Title**

MOBILE DIGITAL FORENSICS

### **Course Description**

This course examines digital forensics of mobile devices such as smart phones and tablets in a law enforcement context. Mobile device characteristics that make forensics examinations difficult are discussed. Various forensics tools are critically examined with an eye toward improved tool development. No credit for students who have taken CS 480.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
  - CS513 - INTENSIVE COMP ARCH & OS (4)
  - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)

### **Cross-Listed Course**

CS480 - MOBILE DIGITAL FORENSICS

## **CS581 - MODELING & SIMULATION I**

### **Long Course Title**

MODELING & SIMULATION I

### **Course Description**

Discrete event simulation from a computer science perspective. Mathematics of probability distributions applied to simulation. Design, implementation, and application of discrete event simulation software. Application to computer and network system design. No credit for students who have taken CS 481.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - ISE690 - STATISTICAL METHODS FOR ENGR (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - MA585 - PROBABILITY (3)

### **Cross-Listed Course**

CS481 - MODELING & SIMULATION I

**CS582 - MODELING & SIMULATION II****Long Course Title**

MODELING & SIMULATION II

**Course Description**

Advanced modeling methods, including Monte Carlo simulation, agent-based modeling, and mathematical modeling, from a Computer Science perspective. Emphasis on implementation, execution, and validation of working computer models using different modeling methods. No credit for students who have taken CS 482.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS481 - MODELING & SIMULATION I (3)
  - CS581 - MODELING & SIMULATION I (3)

**Cross-Listed Course**

CS482 - MODELING & SIMULATION II

**CS585 - INTRO CYBERSECURITY ENGR****Long Course Title**

INTRODUCTION TO CYBERSECURITY ENGINEERING

**Course Description**

Introduction to cryptography, computer security, security management, auditing, process analysis, software security, evaluation, and testing. Focuses on tools, processes, and methods needed to design, implement, and test systems and to adapt existing systems to survive in a hostile environment. No credit for students who have taken CS 485 or CPE 449.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS370 - INTRO COMPUTER NETWORKS (3)
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)

**Equivalent Course(s)**

CPE549 - INTRO TO CYBERSECURITY ENGINRG

**Cross-Listed Course**

CS485 - INTRO CYBERSECURITY ENGR

**CS588 - INTRO TO BIG DATA COMPUTING****Long Course Title**

INTRODUCTION TO BIG DATA COMPUTING

**Course Description**

No credit for students who have taken CS 488.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

**Cross-Listed Course**

CS488 - INTRO TO BIG DATA COMPUTING

**CS590 - PROGRAMMING ENVIRON W/UNIX****Long Course Title**

PROGRAMMING ENVIRONMENT WITHIN UNIX

**Course Description**

Strategies for design and development of systems and programs in the UNIX environment. Emphasis: automated tool and system development using UNIX tools. Advanced shell concepts including control flow and interrupt handling. Process and inter-process communication.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS221 - COMP SCI II: DATA STRUCTURES (3)

**CS595 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Individual directed study under the supervision of an instructor. Must have approval of the instructor.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS596 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS

**Course Description**

Individual directed study under the supervision of an instructor. Must have approval of the instructor.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS600 - INTERNSHIP IN COMPUTER SCIENCE****Long Course Title**

INTERNSHIP IN COMPUTER SCIENCE

**Course Description**

Work experience in Computer Science or a related field in a business or government agency; conducted under the direction of the agency supervisor and approved by a member of the CS faculty. A substantial report must be produced and approved by the supervisor and the faculty member.

**Credits**

1

**CS603 - FORMAL LANG/AUTOMAT THRY****Long Course Title**

FORMAL LANGUAGES AND AUTOMATA THEORY

**Course Description**

Formal definition of programming languages. Formal grammars: regular, context-free, context sensitive, and phrase-structure. Automata: finite-state, pushdown, linear-bounded automata, Turing Machines. Relationship between formal languages and automata.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

## **CS613 - COMPUTER ARCHITECTURES**

### **Long Course Title**

COMPUTER ARCHITECTURES

### **Course Description**

Organization, operation, and analysis of advanced computer architectures. Topics include advanced pipelining approaches, multi-processor architectures, instruction set architectures, memory hierarchy design, hardware and software-based performance optimization, and system performance measurement.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
  - CS513 - INTENSIVE COMP ARCH & OS (4)

## **CS617 - DES & ANALY OF ALGORITHM**

### **Long Course Title**

DESIGN & ANALYSIS OF ALGORITHMS

### **Course Description**

Strategies of algorithm synthesis and analysis. Classical algorithm categories such as: divide-and-conquer, greedy method, dynamic programming, search and traversal. Computational complexity; theoretical results from lower- and upper-bound studies, NP-hard, and NP-complete problems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)

## **CS630 - ARTIFICIAL INTELLIGENCE I**

### **Long Course Title**

ARTIFICIAL INTELLIGENCE I

### **Course Description**

Comparing and evaluating different approaches to the architecture and development of intelligent systems. Computationally efficient solutions for intelligent systems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS530 - SURVEY ARTIFICIAL INTELLIGENCE (3)



## **CS637 - DEEP LEARNING**

### **Long Course Title**

DEEP LEARNING

### **Course Description**

Deep learning, a branch of machine learning focuses on modern neural networks. Deep learning extracts layered data representations to maximize task performance. Requires advanced algorithm and programming knowledge and a strong mathematical background in calculus, linear algebra, and probability & statistics. Several programming projects.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS517 - INTENSIVE COMPUTING THEORY (4)
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)

## **CS640 - MACHINE LEARNING**

### **Long Course Title**

MACHINE LEARNING

### **Course Description**

Discriminant analysis, maximum likelihood decisions, deterministic and nondeterministic approaches for trainable classifiers, preprocessing and feature extraction, clustering, syntatic pattern recognition. Pattern recognition in image analysis.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS517 - INTENSIVE COMPUTING THEORY (4)
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)

**CS641 - DATA MINING****Long Course Title**

DATA MINING

**Course Description**

Data preprocessing, distance measures, classification with decision trees, Bayesian classifiers, neural networks, support vector machines, frequent item set analysis, association rule generation, clustering methods.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS517 - INTENSIVE COMPUTING THEORY (4)
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)

**CS642 - COMP PROC/DIGITAL IMAGES****Long Course Title**

COMPUTER PROCESSING OF DIGITAL IMAGES

**Course Description**

Introduction to image processing systems; sensing, sampling and quantization; image transforms; image enhancement and restoration; image segmentation, and description; image correlation; image sequence analysis; practical applications of image processing.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS517 - INTENSIVE COMPUTING THEORY (4)
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)

## **CS646 - COMPUTER GEOMETRY MODELING**

### **Long Course Title**

COMPUTER GEOMETRY MODELING

### **Course Description**

Numerical and computer representation of curves and surfaces. Solid geometry modeling. Geometric data management. Curve and surface design, including cubic-B-splines, especially Bezier curves/surfaces. Interpolation methods. Graph-based and Boolean models. Applications to robotics, graphics, CAD.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS545 - INTRO COMPUTER GRAPHICS (3)

## **CS650 - SOFT'W ENGINEERING PROC**

### **Long Course Title**

THE SOFTWARE ENGINEERING PROCESS

### **Course Description**

The process of developing complex software products. Includes software life cycles, phases of development and disciplines such as CM, QA, V&V, and T&E. Issues of professionalism and the ethical use of computers. Background in algorithms and programming languages assumed.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS517 - INTENSIVE COMPUTING THEORY (4)
  - CS521 - INTENSIVE INTRO PROGRAMMING (4)

## **CS652 - OBJECT-ORIENTED DESIGN**

### **Long Course Title**

OBJECT-ORIENTED DESIGN

### **Course Description**

A survey of formal and informal techniques and methodologies for software analysis, requirements, architecture and design. Emphasis is on effective development processes. Comparison of different approaches, considering their advantages and disadvantages.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS650 - SOFT'W ENGINEERING PROC (3)

## **CS656 - SOFTWARE TESTING**

### **Long Course Title**

SOFTWARE TESTING

### **Course Description**

Advanced software testing techniques, including white box, black box, integration testing, and system testing. Other topics may include test data adequacy, test data selection, and output oracle, including functional, structural, and fault-based testing methods.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS650 - SOFT'W ENGINEERING PROC (3)

## **CS658 - SOFTWARE PROC & PROD IMPROVEMT**

### **Long Course Title**

SOFTWARE PROCESS & PRODUCT IMPROVEMENT

### **Course Description**

Software quality assurance as an umbrella activity. Use of process, project, quality and product metrics to gain insight into the software development activity. Use of metrics to drive incremental process improvement techniques. Examination of CASE tools and how they affect the software process.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS650 - SOFT'W ENGINEERING PROC (3)

## **CS670 - WIRELESS SENSOR NETWORKS**

### **Long Course Title**

WIRELESS SENSOR NETWORKS

### **Course Description**

Detailed analysis of the organization and operation of wireless sensor networks. Node and network architecture, link-layer protocols, naming and addressing, topology control, routing protocols, data-centric and content-centric networking, transport layer and quality of service.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS370 - INTRO COMPUTER NETWORKS (3)
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)

### **Equivalent Course(s)**

CPE646 - WIRELESS SENSOR NETWORKS

## **CS681 - MALWARE ANALYSIS**

### **Long Course Title**

MALWARE ANALYSIS

### **Course Description**

The goal of this course is to introduce the students to malware analysis. Malware analysis involves both static and dynamic analysis as well as obfuscation techniques. This course assumes basic knowledge of reverse engineering/static analysis. After completing the course a student should be able to statically analyze a malware even if advanced obfuscation techniques are used. Further, the student should be able to setup a sandboxed environment for dynamic analysis and it to dynamically analyze the malware and draw conclusions about the purpose, nature and exploit used by the malware.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
  - CPE557 - SOFTWARE REVERSE ENGR (3)

## **CS685 - APPLIED CRYPTOGRAPHY**

### **Long Course Title**

APPLIED CRYPTOGRAPHY

### **Course Description**

Principles and concepts of applied cryptography. Classical cipher's, advanced encryption standard, public-key cryptography and RSA, key exchange and Diffie-Hellman, hashing, authentication, digital signatures, and other cryptography-related issues.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS370 - INTRO COMPUTER NETWORKS (3)
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)

### **Equivalent Course(s)**

CPE645 - APPLIED CRYPTOGRAPHY

## **CS687 - DATABASE SYSTEMS**

### **Long Course Title**

DATABASE SYSTEMS

### **Course Description**

Basic concepts of database systems. Use of semantic models in database design. Data models with an major focus on the relational and object-oriented models. Relational query languages and normal forms. Database management system design issues. Security and integrity issues.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS490 - INTRO TO OPERATING SYSTEMS (3)
  - CS513 - INTENSIVE COMP ARCH & OS (4)

## **CS690 - ADVANCED OPERATING SYSTEMS**

### **Long Course Title**

ADVANCED OPERATING SYSTEMS

### **Course Description**

Issues related to shared memory multiprocessors, multicore computers, clusters, grids and clouds. Concurrency and distributed process coordination. Introduction to network communication issues and systems such as client-server, peer-to-peer, and transaction based.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CS490 - INTRO TO OPERATING SYSTEMS (3)
  - CS513 - INTENSIVE COMP ARCH & OS (4)
  - CPE434 - OPERATING SYSTEMS (3)

**CS692 - CYBERSECURITY CAPSTONE****Long Course Title**

CYBERSECURITY CAPSTONE

**Course Description**

A capstone course emphasizing the integration of various principles, theories, and techniques for developing, implementing and using cybersecurity strategies and applications in organizations. Includes readings, lectures, situation analysis, cases, and the completion of a major practical project. Normally taken in the last semester of a student's program. Minimum grade of B required.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS585 - INTRO CYBERSECURITY ENGR (3)
    - CPE549 - INTRO TO CYBERSECURITY ENGINEERING (3)
    - IS501 - CYBERSECURITY PRINCIPLES (3)
  - Earn a minimum grade of C- in all of the following:
    - IS550 - CYBERSECURITY MANAGEMENT (3)

**CS695 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Individual directed study under the supervision of an instructor.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS696 - SELECTED TOPICS IN CS****Long Course Title**

SELECTED TOPICS IN COMPUTER SCIENCE

**Course Description**

Course offered by an instructor in a specialized area of computer science.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Must have instructor approval. Required each semester a student is working and receiving direction on a master's thesis. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 6

**CS717 - ADV ALGORITHM DES/ANALYSIS****Long Course Title**

ADVANCED ALGORITHM DESIGN/ANALYSIS

**Course Description**

Parallel algorithms, combinatorial algorithms, approximation algorithms for NP-complete problems, computational complexity. Distribution of algorithms across complex architectures.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS617 - DES & ANALY OF ALGORITHM (3)

**CS790 - OPERATING SYSTEMS SEMINAR****Long Course Title**

OPERATING SYSTEMS SEMINAR

**Course Description**

Advanced research topics in operating system theory and practice. Students will read and discuss classic and current papers in the literature. Each student will present reports in class and prepare a substantial research paper.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS690 - ADVANCED OPERATING SYSTEMS (3)



**CS795 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Individual directed study under the supervision of an instructor.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS796 - ADVANCED SELECTED TOPICS****Long Course Title**

ADVANCED SELECTED TOPICS

**Course Description**

Course offered by an instructor in a specialized area of computer science.

**Credits**

3

**Prerequisites**

- Instructor Permission

**CS799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on doctoral dissertation. Maximum of 18 hours credit toward degree.

**Credits**

0 - 9

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## Early Child & Early Special Education

**ECH306 - PRINCPLS OF EARLY CHILDHOOD ED****Long Course Title**

PRINCIPLES OF EARLY CHILDHOOD EDUCATION

**Course Description**

This introductory course will provide preservice early childhood educators with basic knowledge of the core principles and foundations of early childhood education. The course introduces students to the historical and sociocultural forces that have impacted the field along with contemporary early childhood programs and models, recent trends and issues, and theories of play. Admission to teacher education program required.

**Credits**

3

**Prerequisites**

- Admitted to a program offered by College of Education

**ECH320 - DIFF INSTR FOR EARLY LEARNERS****Long Course Title**

DIFFERENTIATED INSTRUCTION FOR EARLY LEARNERS

**Course Description**

An early childhood education curriculum course designed to provide practical knowledge for blending content areas to maximize children's learning and prepare teacher candidates to meet the needs of children across the curriculum. Focus is on the implementation of a curriculum designed to promote learning and development in the social, emotional, physical, language and cognitive domains. Additionally, the course will emphasize developmentally, culturally, and linguistically appropriate and effective teaching approaches to enhance each child's learning and development. Admission to teacher education program required.

**Credits**

3

**Prerequisites**

- Admitted to a program offered by College of Education

**ECH330 - ASSESSMENT OF YOUNG LEARNERS****Long Course Title**

ASSESSMENT OF DIVERSE YOUNG LEARNERS

**Course Description**

This course provides candidates with an understanding of the forms, functions, methods, and roles of assessment for planning and implementing effective early childhood programs for young children, ages birth to five, from diverse cultures and with varied learning needs. Candidates will explore both quantitative and qualitative approaches to evaluation and assessment. They will learn about technological adaptations to enhance the assessment process. Students will gain an understanding of appropriate strategies for conducting, reporting, and decision making related to specific functions of assessment. They will learn about assessment strategies necessary for second language learners and about adaptations for children with disabilities. They will use selected assessment strategies with young children in their field placements and are expected to become competent in the use of authentic assessment strategies to describe a child's learning strengths and instructional needs. Admission to teacher education program required.

**Credits**

3

**Prerequisites**

- Admitted to a program offered by College of Education

**ECH340 - LANGUAGE, SPEECH & LITERACY DEV****Long Course Title**

EARLY LITERACY AND SPEECH DEVELOPMENT

**Course Description**

This course provides an introductory examination of the development of language, speech, and literacy in young learners. Pragmatic syntactic, and phonological analyses of children's language and speech development are required. The connections of oral communication and written communication (literacy) are explored.

**Credits**

3

**Prerequisites**

- Admitted to a program offered by College of Education

**ECH490 - EARLY CHILDHOOD INTERNSHIP****Long Course Title**

EARLY CHILDHOOD INTERNSHIP

**Course Description**

Observation, participation and teaching in at least two early childhood settings with children ranging from infancy to grade 3 (full time, 15 week semesters). Students will also attend campus-based seminars designed to meet specific needs of the interns. Admission to the teacher education program required.

**Credits**

12

**Prerequisites**

- Admitted to a program offered by College of Education

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## **Economics**

## **ECN142 - PRINC OF MACROECONOMICS**

### **Long Course Title**

PRINCIPLES OF MACROECONOMICS

### **Course Description**

How does our economy function? Why do we have periods of unemployment and inflation and what can we do about it? Economics is a way of thinking about the world, how to identify and focus on fundamental issues so we can understand our economy and how monetary and fiscal policy affects our lives.

### **Credits**

3

### **Prerequisites**

- Earned between 3 and 6 credits from: Courses from -  
*keyboard\_arrow\_up*  
Area III: Mathematics and Sciences - Mathematics
  - MA105 - NATURE OF MATHEMATICS (3)
  - MA107 - ALGEBRA WITH APPLICATIONS (3)
  - MA110 - FINITE MATHEMATICS (3)
  - MA112 - PRECALCULUS ALGEBRA (3)
  - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA171 - CALCULUS I (4)
  - MA181 - INTRODUCTION TO STATISTICS (3)
  - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

Must earn minimum grade of C- in any selected course

### **Charger Foundations**

Area IV: Social & Behavioral Sciences

## **ECN143 - PRINC OF MICROECONOMICS**

### **Long Course Title**

PRINCIPLES OF MICROECONOMICS

### **Course Description**

How do markets coordinate our unlimited wants with our limited capacity to produce? We study producer and consumer choice in a variety of market structures, the social welfare implications inherent in market systems, and policies designed to correct those market failures.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

*keyboard\_arrow\_up*

Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

Must earn minimum grade of C- in any selected course

Courses from -

### **Charger Foundations**

Area IV: Social & Behavioral Sciences

## **ECN340 - MACRO ECONOMIC ANALYSIS**

### **Long Course Title**

MACRO ECONOMIC ANALYSIS

### **Course Description**

A comprehensive study of the nation's economic system. How interdependent market systems determine income, consumption, saving, investment, interest, employment, and the aggregate price level. Determinants of economic growth and the effects of monetary and fiscal policy are central issues.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN142 - PRINC OF MACROECONOMICS (3)
  - ECN143 - PRINC OF MICROECONOMICS (3)

**ECN345 - MICRO ECONOMIC ANALYSIS****Long Course Title**

MICRO ECONOMIC ANALYSIS

**Course Description**

This course provides an informed perspective of, and ability to use, microeconomic theory. We develop the analytical tools needed to solve problems and focus on the logical foundations of these tools. Core topics include consumer behavior, production, exchange, markets, and game theory.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN142 - PRINC OF MACROECONOMICS (3)
  - ECN143 - PRINC OF MICROECONOMICS (3)

**ECN352 - MONEY AND BANKING****Long Course Title**

MONEY AND BANKING

**Course Description**

Organization, operation, and economic significance of monetary and banking systems. Fractional reserve banking systems, money creation, the Federal Reserve System, U.S. financial intermediaries. Introduction to monetary theory and international finance.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN142 - PRINC OF MACROECONOMICS (3)
  - ECN143 - PRINC OF MICROECONOMICS (3)

**Equivalent Course(s)**

FIN352 - MONEY & BANKING

**ECN406 - SPORTS ECONOMICS****Long Course Title**

SPORTS ECONOMICS

**Course Description**

The course uses economic tools to study market outcomes in sports: the market for talent, labor relations, and the role of government. Specific topics include the demand for sports, sports franchises, and the theory of the firm, compensation of player talent, economics of stadiums, and sports media.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN143 - PRINC OF MICROECONOMICS (3)

**ECN411 - ECONOMICS INFORMATION TECH****Long Course Title**

ECONOMICS OF INFORMATION TECHNOLOGY

**Course Description**

This course explores the economic theory underlying consumer and firm behaviour and strategy in the information technology industry with an emphasis on developing formal tools of analysis and applying them to real-world examples. Core topics include cost structures, non-competitive markets, network effects, pricing strategies, and strategic decision problems, including collective action problems such as cybersecurity.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN143 - PRINC OF MICROECONOMICS (3)
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)

**Cross-Listed Course**

ECN511 - ECONOMICS OF INFORMATION TECH

**ECN445 - APPLIED GAME THEORY****Long Course Title**

APPLIED GAME THEORY

**Course Description**

An introduction to game theory and its applications. Students will explore the use of games to understand strategic interactions and apply them to business and other real-world contexts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ECN143 - PRINC OF MICROECONOMICS (3)

**Cross-Listed Course**

ECN545 - APPLIED GAME THEORY

**ECN450 - INTERNATIONAL BUSINESS****Long Course Title**

INTERNATIONAL BUSINESS

**Course Description**

Cross-discipline course combining theoretical and practical aspects of doing business in the global market. Three modules consisting of international management, marketing and economic/finance cover topics including the legal, socio-political environment, negotiations/diplomacy, import/export mechanics, international distribution, balance of payments, hedging, trade agreements (GATT), and international business strategy.

**Credits**

3

**Equivalent Course(s)**

MGT450 - INTERNATIONAL BUSINESS

**ECN454 - INTERNATIONAL ECONOMICS****Long Course Title**

INTERNATIONAL ECONOMICS

**Course Description**

Behavior of foreign exchange rates under different monetary standards, methods of financing international trade, historical development of international financial institutions, current and proposed methods for fostering international trade, and problems of international liquidity.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN301 - PRINCIPLES OF FINANCE (3)

**Equivalent Course(s)**

FIN454 - INTERNATIONAL FINANCE

**Cross-Listed Course**

ECN554 - INTERNATIONAL ECONOMICS



**ECN461 - ECONOMIC DEVELOPMENT****Long Course Title**

ECONOMIC DEVELOPMENT IN THE GLOBAL SOUTH

**Course Description**

Understand economic development in the developing world. Examine economic transformation and social justice. Highlight domestic and international institutional, structural, and political sources of economic dynamism/lack thereof in the Global South.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Must have a class standing of Junior
  - Must have a class standing of Senior

**Cross-Listed Course**

ECN561 - ECONOMIC DEVELOPMENT

**ECN470 - SEMINAR IN ECONOMICS****Long Course Title**

SEMINAR IN ECONOMICS

**Course Description**

Extensive readings and reports reflecting current developments and trends in economic theory and its application to the decision-making process in business and government.

**Credits**

3

**ECN475 - LABOR ECONOMICS****Long Course Title**

LABOR ECONOMICS

**Course Description**

Economic analysis of labor markets; labor demand and labor supply at the market and individual level. Topics include individual decisions to supply labor, compensating wage differentials, human capital investment, discrimination in labor markets, pay and productivity, and the role of labor unions.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN143 - PRINC OF MICROECONOMICS (3)

**Cross-Listed Course**

ECN575 - LABOR ECONOMICS

**ECN480 - INTRO TO ECONOMETRICS****Long Course Title**

INTRODUCTION TO ECONOMETRICS

**Course Description**

An introduction to the quantitative measurement and analysis of actual economic and business phenomena.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MSC288 - BUSINESS STATISTICS II (3)
  - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - ISE390 - PROB & ENGR STATISTICS I (3)
  - PSC300 - INTRO SOCIAL SCIENCE STATISTIC (3)

**Cross-Listed Course**

ECN580 - INTRO TO ECONOMETRICS

**ECN481 - RESEARCH PRACTICUM****Long Course Title**

RESEARCH PRACTICUM

**Course Description**

The economics research practicum is designed to give students research experience. With the approval of one of the economics professors, a student teams up with a professor who mentors them through a research project.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ECN340 - MACRO ECONOMIC ANALYSIS (3)
  - ECN345 - MICRO ECONOMIC ANALYSIS (3)

**ECN490 - SPECIAL PROJECTS****Long Course Title**

SPECIAL PROJECTS

**Course Description**

Faculty guided Independent Study in an area of interest to the student and faculty member. Approval of department chair is required.

**Credits**

3

**Prerequisites**

- Department Chair Permission Required

**Cross-Listed Course**

ECN590 - SPECIAL PROJECTS

**ECN499 - AGENT-BASED COMPUTA ECON****Long Course Title**

AGENT-BASED COMPUTATIONAL ECONOMICS

**Course Description**

Computational Economics introduces students to complex dynamic economic systems. Agent-based computational economics builds systems piece by piece - individual economic agents are constructed and placed in a virtual environment. This creates a virtual laboratory for economic experimentation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN340 - MACRO ECONOMIC ANALYSIS (3)
  - ECN345 - MICRO ECONOMIC ANALYSIS (3)

**ECN511 - ECONOMICS OF INFORMATION TECH****Long Course Title**

ECONOMICS OF INFORMATION TECHNOLOGY

**Course Description**

This course explores the economic theory underlying consumer and firm behavior and strategy in the information technology industry with an emphasis on developing formal tools of analysis and applying them to real-world examples. Core topics include cost structures, non-competitive markets, network effects, pricing strategies, and strategic decision problems, including collective action problems such as cybersecurity.

**Credits**

3

**Cross-Listed Course**

ECN411 - ECONOMICS INFORMATION TECH

**ECN545 - APPLIED GAME THEORY****Long Course Title**

APPLIED GAME THEORY

**Course Description**

An introduction to game theory and its applications. Students will explore the use of games to understand strategic interactions and apply them to business and other real-world contexts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ECN600 - FOUNDATIONS OF ECONOMICS (3)

**Cross-Listed Course**

ECN445 - APPLIED GAME THEORY

**ECN554 - INTERNATIONAL ECONOMICS****Long Course Title**

INTERNATIONAL ECONOMICS

**Course Description**

Behavior of foreign-exchange rates under different monetary standards, methods of financing international trade, historical development of international financial institutions, current and proposed methods for fostering international trade, and problems of international liquidity.

**Credits**

3

**Equivalent Course(s)**

FIN554 - INTERNATIONAL FINANCE

**Cross-Listed Course**

ECN454 - INTERNATIONAL ECONOMICS

**ECN561 - ECONOMIC DEVELOPMENT****Long Course Title**

ECONOMIC DEVELOPMENT

**Course Description**

Understand economic development in the developing world. Examine economic transformation & social change towards addressing poverty, inequality, and social justice. Highlight domestic and international institutional, structural, and political sources of economic dynamism/lack thereof in the Global South.

**Credits**

3

**Cross-Listed Course**

ECN461 - ECONOMIC DEVELOPMENT

**Charger Foundations**

ECONOMIC DEVELOPMENT IN THE GLOBAL SOUTH

**ECN575 - LABOR ECONOMICS****Long Course Title**

LABOR ECONOMICS

**Course Description**

Economic analysis of labor markets; labor demand and labor supply at the market and individual level. Topics include individual decisions to supply labor, compensating wage differentials, human capital investment, discrimination in labor markets, pay and productivity, and the role of labor unions.

**Credits**

3

**Cross-Listed Course**

ECN475 - LABOR ECONOMICS

**ECN580 - INTRO TO ECONOMETRICS****Long Course Title**

INTRODUCTION TO ECONOMETRICS

**Course Description**

An introduction to the quantitative measurement and analysis of actual economic and business phenomena.

**Credits**

3

**Cross-Listed Course**

ECN480 - INTRO TO ECONOMETRICS

**ECN590 - SPECIAL PROJECTS****Long Course Title**

SPECIAL PROJECTS

**Course Description**

Faculty guided independent study in an area of interest to the student and faculty member.

**Credits**

3

**Cross-Listed Course**

ECN490 - SPECIAL PROJECTS

**ECN600 - FOUNDATIONS OF ECONOMICS****Long Course Title**

FOUNDATIONS OF ECONOMICS

**Course Description**

This course covers the economic foundations in which businesses operate. Coverage includes output and pricing decisions of firms in various market structures; consumer and producer choice at the micro level; and macroeconomic issues, such as unemployment and inflation and government policy.

**Credits**

3

**ECN626 - MANAGERIAL ECON & TECH****Long Course Title**

MANAGERIAL ECONOMICS AND TECHNOLOGY

**Course Description**

The principles of microeconomics are used to formulate and analyze problems and these principles are applied to business decisions. The course includes an introduction to regression analysis and forecasting. Basic international economic concepts and the importance of technology are explicitly introduced.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ECN600 - FOUNDATIONS OF ECONOMICS (3)
  - MSC600 - QUANTITATIVE METHODS (3)

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## Education

**ED060 - ENGLISH FOR ACADMC PURP PRGM****Long Course Title**

ENGLISH FOR ACADEMIC PURPOSES PROGRAM

**Course Description**

This course aims to help students achieve a greater level of success academically and professionally. Three types of evaluative and consultation tracks are offered: accent modification, oral communication, and literacy. A speech pathology model is used toward the accent modification and oral communication tracks, and a consultation approach utilizing a modified multi-sensory method focusing on comprehensive literacy is used toward the literacy track. By the end of the course, students typically exhibit a strong improvement in self-confidence and ability to proceed with their studies and professional dealings.

**Credits**

3

**ED301 - INTRO TO EDUCATION PRACTICUM****Long Course Title**

INTRODUCTION TO EDUCATION PRACTICUM

**Course Description**

Initial practicum experience designed to provide the opportunity to explore the role of the classroom teacher in today's diverse school settings. This experience is a prerequisite for admission to the Teacher Education Program.

**Credits**

0

**ED307 - MULTICULTURAL FND EDUCATION****Long Course Title**

MULTICULTURAL FOUNDATIONS OF EDUCATION

**Course Description**

This course will provide students with an understanding of selected philosophical, historical, social, cultural, political, and economic questions and influences on the development of educational policies and practices. Through an examination of constructs such as race, ethnicity, social class, gender, sexual orientation, and religious affiliation, students will develop an understanding of the connections between identity, difference, power and privilege and the role(s) schools play in perpetuating or ending discriminatory practices.

**Credits**

3

**ED308 - EDUCATIONAL PSYCHOLOGY****Long Course Title**

EDUCATIONAL PSYCHOLOGY

**Course Description**

Psychological principles basic to an understanding of the learner, the learning process, and the learning situation. Intensive field experience required.

**Credits**

3

**ED309 - CLASSROOM & BEHAVIOR MGMT****Long Course Title**

CLASSROOM AND BEHAVIOR MANAGEMENT

**Course Description**

This course focuses on instructional options that learners need in order to be successful. It takes a broad approach to classroom and behavior management that is grounded in both theory and reflective practice. Content will emphasize the study and implementation of a variety of classroom and behavior management strategies that are necessary for working with diverse populations. Intensive field experience in an assigned public school required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED310 - TCHNG THE ARTS IN ELEM SCHOOLS****Long Course Title**

TEACHING THE ARTS IN ELEMENTARY SCHOOLS

**Course Description**

This course covers multiple aspects of fine arts education in elementary education including the use of content, functions, and achievements of the performing arts (dance, music, theatre) and visual arts as primary media for communication, inquiry, and engagement among elementary students.

**Credits**

2 - 3

**ED315 - EDUC EVALUATION & MEASUREMENT****Long Course Title**

EDUCATIONAL EVALUATION AND MEASUREMENT

**Course Description**

This course is designed to help prospective teachers use and construct a range of assessments that will help them plan and teach more effectively, improve learning, and meet state and national standards. The class will focus on more traditional assessment issues such as validity and reliability, as well as the alternative assessments that are likely used in today's classrooms. Furthermore, contextual issues such as educational accountability testing, the No Child Left Behind Act, and teacher testing and evaluation (PEPE) will be explored. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED350 - TECHNOLOGY IN CLASSROOM****Long Course Title**

TECHNOLOGY IN THE CLASSROOM

**Course Description**

Introduces prospective teachers to current educational technology. Designed as a laboratory course providing extensive hands-on experiences with microcomputers and other emerging technology. Emphasis is on enabling the student to effectively integrate technology into instructional settings. May be taken prior to entering Teacher Education Program.

**Credits**

3

**ED360 - EARLY CHILDHOOD EDUC PRACTICUM****Long Course Title**

EARLY CHILDHOOD EDUCATION PRACTICUM

**Course Description**

Placement in a state-approved or NAEYC-accredited pre-kindergarten or kindergarten class. Includes a weekly one-hour seminar with a faculty member.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program



**ED371 - TCHG ELEM LANGUAGE ARTS****Long Course Title**

TEACHING ELEMENTARY LANGUAGE ARTS

**Course Description**

Introduction to current practices in language arts instruction with emphasis on the development of an integrated curriculum using children's literature as a foundation. Includes appropriate techniques for the teaching of grammar, spelling, and handwriting. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED372 - TCHG ELEM SOCIAL STUDIES****Long Course Title**

TEACHING ELEMENTARY SOCIAL STUDIES

**Course Description**

Teaching social studies in grades K-6. Helping beginner teachers acquire background skills in organizing and teaching units of work. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED373 - TCHG NATURL/HLTH SCIENCE****Long Course Title**

TEACHING NATURAL AND HEALTH SCIENCE

**Course Description**

Integrates concepts from reflective practice with elementary science teaching. Opportunity to refine teaching skills in the planning, implementation, and evaluation of science lessons and units of instruction. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED374 - TCHG ELEM MATHEMATICS****Long Course Title**

TEACHING ELEMENTARY MATHEMATICS

**Course Description**

Overview of the mathematics concepts and skills taught in grades K-6 with an emphasis on the principles, methods, and materials used in the teaching and evaluation of elementary school mathematics. Focuses on the attitudes and behaviors of students and teachers in the actual planning and implementation of mathematics instruction for an elementary school classroom. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED375 - TCHG READING IN PRIMARY GRADES****Long Course Title**

TEACHING READING IN THE PRIMARY GRADES

**Course Description**

An introduction to the basic principles of literacy instruction in culturally and linguistically diverse primary grade classrooms, including theoretical bases for instruction, methods of instruction and organization, developmentally appropriate strategies and materials, and assessment of children's literacy needs. Class activities will include mini-lessons, discussions, group activities, and presentations. An intensive school-based practicum in grades PreK-2 is required.

**Credits**

3

**ED400 - SPECIAL TOPICS-INTERNSHIP****Long Course Title**

SPECIAL TOPICS-INTERNSHIP

**Course Description**

Innovative internship focused on working with students with disabilities. Observations, participation, and direct instruction and teaching in a middle or high school setting for a prescribed time.

**Credits**

3

**ED401 - FNDS OF REFLECTIVE TEACHING****Long Course Title**

FOUNDATIONS OF REFLECTIVE TEACHING

**Course Description**

This diversity elective is designed to develop reflective practitioners, who study teaching and student learning in an effort to improve teaching practices and also meet certification requirements. The course will use various lenses of professional teacher noticing to select and discuss evidence of effective teaching. Course topics include edTPA rubrics, lesson planning, video teaching episode analysis, student assessments and feedback, academic language for describing teaching, and professional writing about teaching.

**Credits**

3

**ED402 - SPECIAL TOPICS IN EDUCATION****Long Course Title**

SPECIAL TOPICS IN EDUCATION

**Course Description**

Introduces students to current issues and trends within educational practice, policy, and theory through a specific lens. Provides opportunities for students to investigate issues of teaching and learning within the broader social/cultural vantage basic exploration of current research and debate within education. Topic may vary with each offering.

**Credits**

3

**ED405 - RDG STRATEGIES INTERMED GRADES****Long Course Title**

READING STRATEGIES IN THE INTERMEDIATE GRADES

**Course Description**

This course provides an in-depth study in and application of the process of reading and reading instruction, theoretical approaches, instructional strategies, classroom organization, and the formal/informal assessment of reading in intermediate grades. This course is required of all elementary education majors and secondary education candidates who are pursuing a middle school endorsement. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED408 - TCHG READING/CONTENT AREA****Long Course Title**

TEACHING READING IN THE CONTENT AREAS

**Course Description**

Provides knowledge of certain basic developmental and remedial reading skills, practices, and concepts. Extends those learned in previous, reading courses and shows how to apply fundamental skills and knowledge to the classroom. This will include adapting fundamentals of reading instruction to the various subject matter areas (i.e., the sciences, social studies, English, etc.). Survey of special reading programs such as remedial reading and reading instruction as practiced in special education. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**Cross-Listed Course**

ED608 - EXPAND RDG ABIL CONT AREA INST

**ED410 - FOUNDATIONS EDUC EVALUAT****Long Course Title**

FOUNDATIONS OF EDUCATION EVALUATION

**Course Description**

Measurement process with emphasis on its relationship to problems of educational evaluation. Evaluation as an integral part of overall educational planning in addition to its use in measurement and evaluation of academic achievement.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED413 - CHILDREN'S & ADOLESCENT LIT****Long Course Title**

LITERATURE FOR CHILDREN AND ADOLESCENTS

**Course Description**

Course content includes the study of various genres of children's and adolescent literature and their relationship to beginning reading, enhancement of reading comprehension, and intervention instruction in the various content areas. Intensive field experience required. Same as EH 413.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**Equivalent Course(s)**

EH413 - CHILDREN'S & ADOLESCENT LIT

**Cross-Listed Course**

ED513 - LITERATURE FOR CHILDREN & ADOL

**ED421 - SECNDRY ELA INSTR WRIT TO READ****Long Course Title**

SECONDARY ELA INSTRUCTION WRITING TO READ

**Course Description**

Candidates explore the ways they can use specific writing-to-learn activities to enhance their students' capacity to understand a variety of complex texts. Candidates will learn techniques for engaging students in the questioning, inference-making, syntactical pattern recognition, and meaning-making of both fiction and non-fiction works.

**Credits**

2 - 3

**ED422 - MIDDLE & SECD SCH MATH METHODS****Long Course Title**

MIDDLE AND SECONDARY SCHOOL MATHEMATICS METHODS

**Course Description**

This course is part one in a series of two courses that are designed for teacher candidates who are pursuing teaching certification in middle and/or secondary Mathematics. This methods course provides background for middle school and secondary teaching from the perspective of theory, research, and practice.

**Credits**

2 - 3

**ED423 - TCHNG SCIENCE MID & SEC SCH I****Long Course Title**

TEACHING SCIENCE IN MIDDLE AND SECONDARY SCHOOLS I

**Course Description**

This course will focus on how secondary students learn Science. Candidates will learn how to develop and design developmentally appropriate lessons in which their students are able to make observations, examine relationships, notice patterns, and make inferences, while confronting naive misconceptions. Candidates will discuss the nature of science (NOS).

**Credits**

2 - 3

**ED424 - TCHNG SOC STUD MID & SEC SCH I****Long Course Title**

TEACHING SOCIAL STUDIES IN MIDDLE AND SECONDARY SCHOOLS I

**Course Description**

This course teaches research-based techniques and strategies employed by Social Studies teachers at the secondary levels. As well as learning theoretical foundations and the goal of social science instruction (citizenship skills), students will learn pedagogic skills, instructional strategies, and modes of reasoning unique to the social studies classroom.

**Credits**

2 - 3

**ED425 - METHODS OF TEACHG WORLD LANGUA****Long Course Title**

METHODS OF TEACHING WORLD LANGUAGES

**Course Description**

This course is designed to provide undergraduate level Foreign Language majors with the theory, tools (i.e. authentic media and technology), and techniques for teaching middle and secondary students. The focus of the course is primarily, though not exclusively, on designing lessons that allow for maximum student participation and control.

**Credits**

2 - 3

**ED431 - SEC ELA METHD: READING TO WRIT****Long Course Title**

SECONDARY ELA METHODS: READING TO WRITE

**Course Description**

In this course, candidates will explore the ways they can use specific reading activities to enhance their students' ability to express themselves in multiple registers and forms of discourse. Candidates will learn techniques for engaging students in the process of developing and expressing their ideas while demonstrating an improved command of the grammatical, syntactical, and discursive elements of language.

**Credits**

2 - 3

**ED432 - TCH REASON/PROOF SEC MATH****Long Course Title**

TEACHING REASONING AND PROOF IN SECONDARY MATHEMATICS

**Course Description**

This methods course provides background for middle school and secondary teaching from the perspective of theory, research, and practice. It is designed to provide an introduction to and practice ways in which to engage students in mathematical reasoning and proof.

**Credits**

2 - 3

**ED433 - TEACH SC MID & SEC SCHOOL II****Long Course Title**

TEACHING SCIENCE IN MIDDLE AND SECONDARY SCHOOLS II

**Course Description**

Students will discuss the status of Science education in our nation's schools, and the need for implementing research-based strategies in the classroom using the 5E learning cycle as framework.

**Credits**

2 - 3

**ED434 - TCHG SOC ST MID & SEC SCHLS II****Long Course Title**

TEACHING SOCIAL STUDIES IN MIDDLE AND SECONDARY SCHOOLS II

**Course Description**

This methods course is designed to study effective techniques and strategies employed by Social Studies teachers at the middle and secondary levels. As well as learning theoretical foundations in social studies education, students will learn pedagogic skills, instructional strategies, and modes of reasoning unique to the social studies classroom.

**Credits**

2 - 3

**ED435 - DIFF INSTR IN WORLD LANGUAGES****Long Course Title**

DIFFERENTIATED INSTRUCTION IN THE FOREIGN LANGUAGE CLASSROOM

**Course Description**

This course is designed to provide undergraduate level Foreign Language majors with the theory, tools (i.e. authentic media and technology), and techniques for teaching middle and secondary students. The focus of the course is primarily, though not exclusively, on designing lessons that allow for maximum student participation through and understanding of student development.

**Credits**

2 - 3

**ED490 - EARLY CHILDHOOD INTERNSHIP****Long Course Title**

EARLY CHILDHOOD INTERNSHIP

**Course Description**

Observation, participation and teaching in at least two early childhood settings with children ranging from infancy to grade 3. (full time, 15 week semesters). Students will also attend campus-based seminars designed to meet specific needs of the interns.

**Credits**

12

**ED493 - ELEMENTARY SCHOOL INTERNSHIP****Long Course Title**

ELEMENTARY SCHOOL INTERNSHIP

**Course Description**

Observation, participation, and teaching in elementary school (full time, 15 week semester). Students will also attend campus-based seminars designed to meet specific needs of the interns.

**Credits**

12

**Prerequisites**

- Must have a class standing of Senior

**ED497 - HIGH SCHOOL INTERNSHIP****Long Course Title**

HIGH SCHOOL INTERNSHIP

**Course Description**

Observation, participation, and teaching in middle/high school (full time, 15 week semester). Students will also attend campus-based seminars designed to meet specific needs of the interns.

**Credits**

12

**Prerequisites**

- Must have a class standing of Senior



**ED499 - P-12 INTERNSHIP****Long Course Title**

P-12 INTERNSHIP

**Course Description**

Observation, participation, and teaching in elementary and middle/high school (full time, 15 week semester). Students will also attend campus-based seminars designed to meet specific needs of the interns.

**Credits**

12

**Prerequisites**

- Must have a class standing of Senior

**ED500 - SPEC TOPICS EDUCATION****Long Course Title**

SPECIAL TOPICS IN EDUCATION

**Course Description**

Independent study, special projects, and special in-service programs.

**Credits**

1 - 3

**ED501 - INTRO TO EDUCATION****Long Course Title**

INTRODUCTION TO EDUCATION PRACTICUM

**Course Description**

Initial practicum experience designed to provide the opportunity to explore the role of the classroom teacher in today's diverse school settings. Required for graduate students receiving their initial certification.

**Credits**

0

**ED510 - FOUNDATIONS OF LITERACY****Long Course Title**

FOUNDATIONS OF LITERACY

**Course Description**

This course includes a study of methods, materials, and strategies for reading instruction. Components of the course will include but not be limited to the five pillars of reading instruction identified by the National Reading Panel (2000): phonemic awareness, phonics, fluency, vocabulary, and comprehension. Emphasis is placed on the various stages of and approaches to literacy development, knowledge of which is required for the Alabama Reading Specialist licensure.

**Credits**

3

**ED513 - LITERATURE FOR CHILDREN & ADOL****Long Course Title**

LITERATURE FOR CHILDREN AND ADOLESCENTS

**Course Description**

Course content will include the study of various genres of children's and adolescent literature and their relationship to beginning reading, enhancement of reading comprehension, and intervention instruction in the various content areas. (Same as EH 613) Must be admitted to the Teacher Education Program.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**Cross-Listed Course**

ED413 - CHILDREN'S & ADOLESCENT LIT

**ED520 - COMPUTER BASED INSTRUCT'L TECH****Long Course Title**

COMPUTER BASED INSTRUCTIONAL TECHNOLOGY

**Course Description**

Introduces prospective teachers to current state of the art in educational technology. Extensive hands-on experiences with microcomputers and other emerging technology. Emphasis on effectively integrating technology into instructional setting for both special and regular students.

**Credits**

3

**ED521 - SECNDRY ELA INSTR WRIT TO READ****Long Course Title**

SECONDARY ELA INSTRUCTION WRITING TO READ

**Course Description**

Candidates explore the ways they can use specific writing-to-learn activities to enhance their students' capacity to understand a variety of complex texts. Candidates will learn techniques for engaging students in the questioning, inference-making, syntactical pattern recognition, and meaning-making of both fiction and nonfiction works.

**Credits**

2 - 3

**ED522 - MIDDLE & SECD SCH MATH METHODS****Long Course Title**

MIDDLE AND SECONDARY SCHOOL MATHEMATICS METHODS

**Course Description**

This course is part one in a series of two courses that are designed for teacher candidates who are pursuing teaching certification who are pursuing teaching certification in middle and/or secondary mathematics. This methods course provides background for middle school and secondary teaching from the perspective of theory, research, and practice.

**Credits**

2 - 3

**ED523 - TCHNG SCIENCE MID & SEC SCH I****Long Course Title**

TEACHING SCIENCE IN MIDDLE AND SECONDARY SCHOOLS I

**Course Description**

This course will focus on how secondary students learn science. Candidates will learn how to develop and design developmentally appropriate lessons in which their students are able to make observations, examine relationships, notice patterns, and make inferences, while confronting naive misconceptions. Candidates will discuss the nature of science (NOS).

**Credits**

2 - 3

**ED524 - TCHNG SOC STUD MID & SEC SCH I****Long Course Title**

TEACHING SOCIAL STUDIES IN MIDDLE AND SECONDARY SCHOOLS I

**Course Description**

This course teaches research-based techniques and strategies employed by social science teachers at the secondary levels. As well as learning theoretical foundations and the goal of social science instruction (citizenship skills), students will learn pedagogic skills, instructional strategies, and modes of reasoning unique to the social studies classroom.

**Credits**

2 - 3

**ED530 - APPLIED MULTICULTURALISM****Long Course Title**

APPLIED MULTICULTURALISM

**Course Description**

Through an examination of constructs such as race, ethnicity, social class, gender, sexual orientation, and religious affiliation, students will develop an understanding of the connections between identity, difference, power, and privilege and the role(s) school (could/should) play in perpetuating or ending discriminatory practices. Furthermore and more importantly, students will develop an understanding of the ways research in both the humanities and social sciences can be used to interpret, analyze, and critique multiculturalism. Students will leave the course with research-based pedagogical practices designed to help all students learn to the best of their abilities.

**Credits**

3

**ED531 - SEC ELA METHDS READING****Long Course Title**

SECONDARY ELA INSTRUCTION READING TO WRITE

**Course Description**

In this course, candidates will explore the ways they can use specific reading activities to enhance their students' ability to express themselves in multiple registers and forms of discourse. Candidates will learn techniques for engaging students in the process of developing and expressing their ideas while demonstrating and improved command of the grammatical, syntactical, and discursive elements of language.

**Credits**

2 - 3

**ED532 - SPACE ORIENTATION TEACHERS****Long Course Title**

SPACE ORIENTATION FOR TEACHERS

**Course Description**

A weeklong course at the U.S. Space and Rocket Center in Huntsville, Alabama for pre-service and in-service teachers. The inquiry based workshops are taught around the theme of space exploration include activities to be done across the curriculum. All activities are correlated to National Math, Science, Technology, Social Studies, and Reading Standards. Activities based on curriculum developed by NASA, CAP, NSATA, and the USSRC. Topics include moon, mars, rocketry, propulsion, hydroponics, math, biology, history and literature.

**Credits**

3

**ED533 - TEACH SC MID & SEC SCHOOL II****Long Course Title**

TEACHING SCIENCE IN MIDDLE AND SECONDARY SCHOOLS II

**Course Description**

Students will discuss the status of science education in our nation's schools, and the need for implementing research-based strategies in the classroom using the 5E learning cycle as framework.

**Credits**

2 - 3

**ED534 - TEACH SOC ST MID & SEC SCHL II****Long Course Title**

TEACHING SOCIAL STUDIES IN MIDDLE AND SECONDARY SCHOOLS II

**Course Description**

This methods course is designed to study effective techniques and strategies employed by social science teachers at the middle and secondary levels. As well as learning theoretical foundations in social studies education, students will learn pedagogic skills, instructional strategies, and modes of reasoning unique to the social studies classroom.

**Credits**

2 - 3

**ED535 - INTRO APPLIED EDUCATIONAL RES****Long Course Title**

INTRODUCTION TO APPLIED EDUCATIONAL RESEARCH

**Course Description**

Introduction to the nature of research and its relationship to educational thought and practice. Primary focus will be on planning and executing research activities (i.e. action research, thesis development) in the diverse classroom and analyzing the collected data to improve instruction, educational performance, and adding to the body of knowledge in educational practices.

**Credits**

3

**ED539 - TCH REASON/PROOF SEC MATH****Long Course Title**

TEACHING REASONING AND PROOF IN SECONDARY MATHEMATICS

**Course Description**

This methods course provides background for middle school and secondary teaching from the perspective of theory, research, and practice. It is designed to provide an introduction to and practice in ways in which to encourage students in mathematical reasoning and proof.

**Credits**

2 - 3

**ED540 - COGN DEV THEORIES LEARNING****Long Course Title**

COGNITIVE DEVELOPMENT THEORIES OF LEARNING

**Course Description**

The course is designed to inform students about recent developments in Cognitive Psychology and their implications for teaching and learning. Students will leave the course with a variety of "cognitive understandings" for use in differentiated classrooms.

**Credits**

3

**ED545 - CURR & INSTR IN SEC SCHOOLS****Long Course Title**

CURRICULUM AND INSTRUCTION IN SECONDARY SCHOOLS

**Course Description**

This course is designed to address various contemporary teaching and learning strategies, as well as related issues, assessments strategies, and applicable theories related to secondary teaching and learning.

**Credits**

3

**ED565 - INTRO DIFFERENTIATED INSTRUCTI****Long Course Title**

INTRODUCTION TO DIFFERENTIATED INSTRUCTION

**Course Description**

The course provides an introduction to the philosophy and practice of differentiation. Students will examine the elements, content, process, product, affect and environment by which instruction can be differentiated to address the complex challenges of meeting the diverse learning needs of all students.

**Credits**

3

**ED570 - DIFF INSTRUCTION SPEC POP****Long Course Title**

DIFFERENTIATED INSTRUCTION FOR SPECIAL POPULATIONS

**Course Description**

The course provides practical strategies to maximize learning for all students, particularly those with disabilities, gifted/talented, and English language learners (ELL).

**Credits**

3

**ED575 - READING PRIMARY GRADES****Long Course Title**

READING IN THE PRIMARY GRADES

**Course Description**

An introduction to the basic principles of literary instruction in culturally and linguistically diverse primary grade classrooms, including theoretical bases for instruction, methods of instruction and organization, developmentally appropriate strategies and materials, and assessment of children's literacy. Class activities include mini-lessons, discussions, group activities, and presentations. An intensive school-based practicum in grades preK-2 is required.

**Credits**

3

**ED580 - PROJECT BASED LEARNING****Long Course Title**

PROJECT BASED LEARNING

**Course Description**

Develop a robust understanding of Project Based Learning (PBL) through critiquing, evaluating, and synthesizing PBL's core theoretical concepts.

**Credits**

3

**ED593 - ED EXCEPT CHILD & YOUTH****Long Course Title**

EDUCATING EXCEPTIONAL CHILDREN AND YOUTHS

**Course Description**

Introduction to the field of exceptional children and youth, including observations. This course, or equivalent, is a prerequisite to certification. Intensive field experience required.

**Credits**

3

**ED600 - SPEC PROB IN EDUCATION****Long Course Title**

SPECIAL PROBLEMS IN EDUCATION

**Course Description**

Independent study, special projects, and in-service programs.

**Credits**

1 - 3

**ED604 - CONTRIBUTION PSY TO EDUC****Long Course Title**

CONTRIBUTIONS IN PSYCHOLOGY TO EDUCATION

**Course Description**

Principles, theory, and practice of psychology for teaching and administrative service in educational institutions. Factors that determine learning and conditions of effective teaching. Administrator and supervisor as organizer of the milieu wherein teaching, learning, and growth occur. Intensive field experience required.

**Credits**

3

**ED605 - READING RESEARCH & INSTRUCTION****Long Course Title**

REACHING RESEARCH AND INSTRUCTION

**Course Description**

Elements of effective reading instruction for beginning readers as supported by current research and practice. Topics include balance, language-rich/print-rich environment, language development, phonemic awareness, print awareness, phonics, writing, spelling, and comprehension. Intensive field experience required.

**Credits**

3

**ED607 - EDU LEADER AS EVALUATOR****Long Course Title**

EDUCATIONAL LEADER AS THE EVALUATOR

**Course Description**

Procedures and techniques of evaluation and research approaches. Emphasis on teachers as evaluators; based on action research in the classroom. Intensive field experience required.

**Credits**

3

**ED608 - EXPAND RDG ABIL CONT AREA INST****Long Course Title**

EXPANDING READING ABILITY IN THE CONTENT AREA

**Course Description**

Strategies to enhance reading comprehension when using materials in all subject areas. Teacher directed, integrated instruction; extensive use of authentic printed materials; discussion at literal and higher levels of understanding, motivation, vocabulary, and writing. Intensive field experience required.

**Credits**

3

**ED609 - CLASSROOM & BEHAVIOR MGMT****Long Course Title**

CLASSROOM AND BEHAVIOR MANAGEMENT

**Course Description**

A focus on the variety of instructional management options to meet classroom and individual student needs to ensure success in school is integrated throughout all course activities. A range of management practices, including strategies for diverse and special populations is offered. Theoretical and reflective practices are incorporated during classroom meetings. Students will observe, research, and discuss current classroom approaches. After reflections, effectiveness of observed practices will be assessed. Student will discuss and develop alternative activities that promote successful management techniques. Intensive field experience required. Admission to the Teacher Education program or permission of chair is required for this class.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED610 - TEACHING FINE ARTS ELEM SCHOOL****Long Course Title**

TEACHING FINE ARTS IN THE ELEMENTARY SCHOOL

**Course Description**

This course covers multiple aspects of fine arts education including the use of content, functions, and achievements of the performing arts (dance, music, theatre) and visual arts as primary media for communication, inquiry, and engagement among elementary students.

**Credits**

2 - 3



**ED612 - DIAGNOSIS & ASSMNT OF READING****Long Course Title**

DIAGNOSIS AND ASSESSMENT OF READING

**Course Description**

Focuses on ways to address the needs of students who do not read at grade level. Intervention strategies such as on-going assessment and evaluation, explicit instruction in phonemic awareness and phonics, extensive practice, comprehension strategies, and writing, along with careful examination of standardized state assessment measures. Intensive field experience required.

**Credits**

3

**ED615 - READING INTERMEDIATE GRD****Long Course Title**

READING IN THE INTERMEDIATE GRADES

**Course Description**

This course provides an in-depth study in and application of the process of reading and reading instruction, theoretical approaches, instructional strategies, classroom organization, and the formal/informal assessment of reading in intermediate grades. This course is required of all elementary education majors and secondary education candidates who are pursuing a middle school endorsement. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED620 - USING TECH REACH SPEC POP****Long Course Title**

USING TECHNOLOGY FOR SPECIAL POPULATIONS

**Course Description**

Prepares teachers to plan curriculum integration by using computer technology and software in various curriculum areas for both regular and special students. Students will develop competency in instructional design and production skill techniques and implement instructional events using long-distance technologies.

**Credits**

3

**ED635 - ASMT GUIDE DIFFRNT INSTRUCTION****Long Course Title**

USING ASSESSMENT TO GUIDE DIFFERENTIATED INSTRUCTION

**Course Description**

The focus of this course would be to use a variety of norm-referenced, criterion-referenced and other assessment data to inform instruction for a diverse classroom within the RTi model. Students would learn to use formative and summative assessments to determine the type of strategies needed to teach content.

**Credits**

3

**ED650 - DIFFNT ELEM MATH & SCI INSTRUC****Long Course Title**

DIFFERENTIATING ELEMENTARY MATHEMATICS AND SCIENCE INSTRUCTION

**Course Description**

This course will focus on guiding the learner to apply the concepts of differentiated instruction within mathematics and science contexts. Participants will learn how to implement effective strategies for managing flexible groups, acquire ideas for providing students with a variety of options to successfully target mathematics and science standards and understand how to plan strategically in order to reach the needs of diverse learners within the classroom through inquiry-based learning.

**Credits**

3

**ED665 - DIFFNT ELEM LITERACY (R & W)****Long Course Title**

DIFFERENTIATING ELEMENTARY LITERACY (READING AND WRITING INSTRUCTION)

**Course Description**

This course will focus on guiding the learner to apply the concepts of differentiated instruction to elementary literacy concepts. Advanced teacher candidates will develop and implement differentiated instructional plans that utilize individual and flexible grouping strategies and resources to support the growth of strategic, independent readers and writers.

**Credits**

3

**ED671 - TCHG ELEM LANGUAGE ARTS****Long Course Title**

TEACHING ELEMENTARY LANGUAGE ARTS

**Course Description**

Introduction to current practices in language arts instruction with emphasis on the development of an integrated curriculum using children's literature as a foundation. Includes appropriate techniques for teaching of grammar, spelling, and handwriting. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED672 - TCHG ELEM SOCIAL STUDIES****Long Course Title**

TEACHING ELEMENTARY SOCIAL STUDIES

**Course Description**

Teaching social studies in grades K-6. Helping beginning teachers acquire background skills in organizing and teaching units of work. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED673 - TCHG NATURAL/HLTH SCIENCE****Long Course Title**

TEACHING NATURAL AND HEALTH SCIENCE

**Course Description**

Integrates concepts from reflective practice with elementary science teaching. Opportunity to refine teaching skills in the planning, implementation, and evaluation of science lessons and units of instruction. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED674 - TCHG ELEM. MATHEMATICS****Long Course Title**

TEACHING ELEMENTARY MATHEMATICS

**Course Description**

Overview of the mathematics concepts and skills taught in grades K-6 with an emphasis on the principles, methods, and materials used in the teaching and evaluation of elementary school mathematics. Focuses on the attitudes and behaviors of students and teachers in the actual planning and implementation of mathematics instruction for an elementary school classroom. Intensive field experience required. Prerequisite: Admission to the Teacher Education Program.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**ED690 - MASTER'S ACTION RESEARCH PROJ****Long Course Title**

MASTER'S ACTION RESEARCH PROJECT

**Course Description**

The capstone course will serve as a mechanism to support the research, methodology, development, and experimental stages of the required action research. The student's work will be approved and supervised by a selected faculty advisor with direct connections to the research area. A symposium in which students present their research report will be culminating activity.

**Credits**

3

**ED692 - ADVANCED P-12 INTERNSHIP****Long Course Title**

ADVANCED P-12 INTERNSHIP

**Course Description**

This internship is for students in advanced programs. The internship is completed throughout the program with a culminating portfolio of all internship assignments.

**Credits**

3

**ED693 - ELEMENTARY INTERNSHIP****Long Course Title**

ELEMENTARY INTERNSHIP

**Course Description**

Observation, participation and teaching in elementary school (full time, 15 week semesters). Students will also attend campus-based seminars designed to meet specific needs of the interns.

**Credits**

3 - 6

**ED696 - P-12 INTERNSHIP****Long Course Title**

P-12 INTERNSHIP

**Credits**

3 - 6

**ED698 - HIGH SCHOOL INTERNSHIP****Long Course Title**

HIGH SCHOOL INTERNSHIP

**Course Description**

Observation, participation, and teaching in middle/high school (full-time, 15 week semester). Students will also attend campus based seminars designed to meet specific needs of interns.

**Credits**

3 - 6

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## Education Abroad

**EA171 - EDU ABROAD WITH EP****Long Course Title**

EDUCATION ABROAD WITH EXCHANGE PROGRAMS

**Course Description**

This is a placeholder course for students participating in study abroad programs. The credits are variable (1-15). It notifies the Bursar's Office that the credits are part of an exchange program and that tuition and fees should be assessed. It also notifies the Financial Aid Office that UAH scholarships apply for the term, if any.

**Credits**

0 - 15

**EA172 - EDU ABROAD WITH AP****Long Course Title**

EDUCATION ABROAD WITH AFFILIATE PROVIDER PROGRAMS

**Course Description**

This is a placeholder course for students participating in study abroad programs. The credits are variable (1-15). It notifies the Bursar's office that the credits are part of an affiliate provider program and no UAH tuition and fees should be assessed. It also notifies the Financial Aid Office that UAH merit-based scholarships do not apply for the term.

**Credits**

0 - 15

**EA173 - EDU ABROAD WITH NAP****Long Course Title**

EDUCATION ABROAD WITH NON-AFFILIATED PROGRAMS

**Course Description**

This is a placeholder course for students participating in study abroad programs. The credits are variable (1-15). It notifies the Bursar's Office that the credits are part of a non-affiliated program and no UAH tuition and fees should be assessed. It also notifies the Financial Aid Office that UAH merit-based scholarships do not apply for the term.

**Credits**

0 - 15

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# Education Collaborative

## **EDC301 - TCHG THE EXCEPTIONAL CHILD**

### **Long Course Title**

TEACHING THE EXCEPTIONAL CHILD

### **Course Description**

Examines special education laws and methodology used in teaching special education students. Focus is primarily on those students with mild learning disabilities. Also examines requirements needed in the regular classroom for special teachers. Intensive field experience required.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - ED301 - INTRO TO EDUCATION PRACTICUM (0)
    - ED307 - MULTICULTURAL FND EDUCATION (3)
    - ED308 - EDUCATIONAL PSYCHOLOGY (3)
    - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - Student must be in College of Education Teacher Education Program

## **EDC302 - INTRO LOW INCIDENCE POPULATION**

### **Long Course Title**

INTRODUCTION TO LOW INCIDENCE POPULATIONS

### **Course Description**

Students will learn about low incidence disabilities through reading, research, discussion, and the integration of specific learning strategies during class activities. Students are expected to complete a case study/practicum with a disabled student in addition to 15 hours of observation in classrooms for low incidence exceptional students. Intensive field experience required.

### **Credits**

3

### **Prerequisites**

- Student must be in College of Education Teacher Education Program

**EDC311 - INSTR STRATEGIES INCLUSIVE CLR****Long Course Title**

INSTRUCTIONAL STRATEGIES IN INCLUSIVE CLASSROOMS

**Course Description**

Students learn about low incidence disabilities through reading, research, discussion, and the integration of specific learning strategies during class activities. Students are expected to complete a case study/practicum with a disabled student in addition to 15 hours of observation in classrooms for low incidence exceptional students. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
  - Student must be in College of Education Teacher Education Program

**EDC316 - DIFFER INSTR FOR ECSE****Long Course Title**

DIFFERENTIATED INSTRUCTION FOR EARLY CHILDHOOD

**Course Description**

This course provides practical strategies to maximize learning for all young learners (birth to 8 years old) with a variety of disabilities. Students will learn to utilize the principles of universal design for learning and differentiated instruction to create structured classrooms and lessons that meet the individual needs of young learners with special needs. This will include learning to select, implement, and evaluate lesson accommodations and modifications for students with exceptional needs.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**EDC321 - COLLAB CONSU(PARENT-TCHR-TEAM)****Long Course Title**

COLLABORATIVE CONSULTATION (PARENT-TEACHER TEAMS)

**Course Description**

This class focuses on the description and rationale for collaboration, including communication skills, group work, problem solving, and co-teaching. Each student will participate as a member of a collaborative team during the practicum. This course will also provide an examination of selected school district issues involving collaboration within traditional K-12 educational settings. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**EDC331 - CRITICAL ISSUES IN SPEC EDUC****Long Course Title**

CRITICAL ISSUES IN SPECIAL EDUCATION

**Course Description**

Provides an in-depth discussion and evaluation of current issues in special education such as litigation, legislation, personnel preparation, and research. School-based practicum required. Intensive field experience required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**EDC341 - ASSESS/PLN TRANSITION K-12 STU****Long Course Title**

ASSESSMENT AND PLANNING TRANSITION FOR K-12 STUDENTS

**Course Description**

Teacher candidates will develop the skills necessary for transitional planning, including administering cognitive, social, and functional assessments. Results of assessments will be interpreted and utilized to plan transitions from one placement to another, to inform instruction in regular, inclusive and self-contained classrooms, and to develop Individualized Education Plans (IEPs) for eligible students. Field work is required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**EDC351 - BEHAVIOR ONLY & INTERVENTION****Long Course Title**

BEHAVIORAL ANALYSIS AND INTERVENTION

**Course Description**

This course focuses on the concepts of applied behavior analysis and how to implement those concepts in classrooms and other settings. Students learn how to conduct a functional behavior assessment and design, implement, and evaluate a behavioral-change project with an appropriate subject in a public school setting. Intensive field work required.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program



**EDC361 - ECSE PRACTICUM****Long Course Title**

EARLY CHILDHOOD SPECIAL EDUCATION PRACTICUM

**Course Description**

A three-hour credit course in a state-approved or NAEYC-accredited early childhood education setting that includes children with developmental delays or diagnosed disabilities. It includes a weekly one hour seminar with a faculty member.

**Credits**

3

**Prerequisites**

- Student must be in College of Education Teacher Education Program

**EDC511 - INSTRUCTIONAL STRATEGIES****Long Course Title**

INSTRUCTIONAL STRATEGIES FOR INCLUSIVE CLASSROOMS

**Course Description**

This course provides foundational, in-depth pedagogical strategies for assisting learners in constructing their own understanding of information. This course focuses on multiple instructional options that all learners need in order to be successful. It takes a broad approach to the multiple teaching models that are necessary for working with diverse populations.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - ED501 - INTRO TO EDUCATION

**EDC551 - FND OF VISUAL IMPAIRMENTS****Long Course Title**

FOUNDATIONS OF VISUAL IMPAIRMENTS

**Course Description**

Introduction to academic language found within the profession of special education of students with visual impairments. Examines standards, organizations, programs, and services for students with visual impairments. Studies the basic anatomy, diseases, and disorders of the visual system and explores how to conduct a Functional Vision Assessment.

**Credits**

3

**EDC560 - INT O & M SKILLS****Long Course Title**

INTERMEDIATE ORIENTATION AND MOBILITY SKILLS

**Course Description**

Development of orientation and mobility skills for individuals who are blind and visually impaired. Topics include human guide, indoor travel, and residential travel.

**Credits**

3

**EDC561 - ADV O & M SKILLS****Long Course Title**

ADVANCED ORIENTATION AND MOBILITY SKILLS

**Course Description**

Development of advanced orientation and mobility skills for individuals who are blind or visually impaired. Topics include business travel, rural travel, and specialized travel.

**Credits**

3

**EDC610 - BEHAVIORAL ASSESSMENT****Long Course Title**

BEHAVIORAL ASSESSMENT

**Course Description**

This course will provide an introduction to the strategies, methods, and ethics associated with behavioral assessment. The defining characteristics, strengths, and weaknesses of indirect assessments, descriptive assessments, and functional analysis will be reviewed. Students will learn to differentiate between and implement each type of assessment method. Assessment data collection, analysis, and interpretation will be discussed in the context of identifying appropriate behavioral interventions and goals.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EDC612 - FUNDAMENTALS IN ABA I (3)
  - EDC613 - FUNDAMENTALS OF ABA II (3)
  - EDC614 - RESEARCH METHODS IN ABA (3)

**EDC611 - ETHICS IN ABA****Long Course Title**

ETHICS AND PROFESSIONALISM IN APPLIED BEHAVIOR ANALYSIS

**Course Description**

This course will familiarize the student with ethical and professional responsibilities for Board Certified Behavior Analysts. Ethical decision-making processes will be emphasized with respect to the ethical guidelines set forth by the BACB (C), and the relationship between ethics, policy, and law will be explored.

**Credits**

3

**EDC612 - FUNDAMENTALS IN ABA I****Long Course Title**

FUNDAMENTALS OF APPLIED BEHAVIOR ANALYSIS I

**Course Description**

This course will introduce students to the goals, philosophical assumptions, and dimensions of applied behavior analysis. Students will also be introduced to the basic concepts and principles of behavior analysis including, but not limited to, respondent and operant conditioning, reinforcement and punishment contingencies, schedules of reinforcement, extinction, motivating operations, and automatically and socially mediated consequences. The concepts and principles will be discussed with respect to how they are relevant to socially significant behavior.

**Credits**

3

**EDC613 - FUNDAMENTALS OF ABA II****Long Course Title**

FUNDAMENTALS OF APPLIED BEHAVIOR ANALYSIS II

**Course Description**

Students will describe and explain behavior from the perspective of radical behaviorism and distinguish among behaviorism, the experimental analysis of behavior, applied behavior analysis, and professional practice guided by the science of behavior analysis. Students will be able to define and provide examples of more complex concepts and principles such as stimulus control, discrimination, generalization, verbal operants, and derived stimulus relations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EDC612 - FUNDAMENTALS IN ABA I (3)

**EDC614 - RESEARCH METHODS IN ABA****Long Course Title**

RESEARCH METHODS OF APPLIED BEHAVIOR ANALYSIS

**Course Description**

The purpose of this course is to introduce students to the fundamentals of behavior analytic research methods. The course will examine the strategies and tactics used in single-subject research to implement socially important behavior change.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EDC612 - FUNDAMENTALS IN ABA I (3)

## **EDC615 - INTERVENTIONS IN ABA**

### **Long Course Title**

INTERVENTIONS IN APPLIED BEHAVIOR ANALYSIS

### **Course Description**

This course will prepare students to identify and implement effective, data-based behavior-change procedures and interventions in applied settings. Elements of behavior change and procedures to accomplish behavior increases, decreases, generalization, and maintenance will be examined. Emphasis will be placed on reinforcement, schedules of reinforcement, extinction, and alternate treatment procedures. This course will also examine strategies, teaching self-management, group-oriented contingencies, shaping techniques, behavior chains, motivational systems, punishment, and other topics. Students will learn how to select and implement function-based interventions for the reduction of problem behaviors and skills-based prevention strategies.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EDC612 - FUNDAMENTALS IN ABA I (3)
  - EDC613 - FUNDAMENTALS OF ABA II (3)
  - EDC614 - RESEARCH METHODS IN ABA (3)

## **EDC616 - SUPERVISION & MGMT IN ABA**

### **Long Course Title**

SUPERVISION AND MANAGEMENT IN APPLIED BEHAVIOR ANALYSIS

### **Course Description**

This course will prepare students to conduct supervision using the principles of behavior analysis. Students will develop performance expectations based on the context, select individualized, assessment-based goals to develop supervisee skills, develop function-based strategies to improve supervisee performance, and design staff training procedures based on behavior analytic research.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EDC610 - BEHAVIORAL ASSESSMENT (3)
  - EDC612 - FUNDAMENTALS IN ABA I (3)
  - EDC613 - FUNDAMENTALS OF ABA II (3)
  - EDC614 - RESEARCH METHODS IN ABA (3)
  - EDC615 - INTERVENTIONS IN ABA (3)

## **EDC617 - SUPERVISED FIELDWORK ABA**

### **Long Course Title**

INTRODUCTION TO SUPERVISED FIELDWORK IN APPLIED BEHAVIOR ANALYSIS

### **Course Description**

This course will introduce students to supervised experience through the practice of applied behavior analysis in clinical and academic settings, such as an outpatient clinic and a child development center. This course may be repeated.

### **Credits**

1 - 3

**EDC625 - ASSISTIVE TECH EDUC INDV W/ASD****Long Course Title**

ASSISTIVE TECHNOLOGY FOR EDUCATING INDIVIDUALS WITH ASD

**Course Description**

This course provides an overview of assistive technology devices and services that are used in the instruction of students with autism spectrum disorders (ASD) and other communication disabilities.

**Credits**

3

**EDC636 - INTRO STUD AUTISM SPECTR DISOR****Long Course Title**

INTRODUCTION TO STUDENTS WITH AUTISM SPECTRUM DISORDERS

**Course Description**

This course will provide advanced teacher candidates with an introduction to working with students diagnosed with autism spectrum disorders. Candidates will develop an understanding of the range of characteristics and behaviors associated with ASD, the effectiveness of early intervention on behaviors, and the theories regarding the etiology of the disorder.

**Credits**

3

**EDC645 - ASMT & BEHAVIOR APPLC ASD****Long Course Title**

ASSESSMENT AND BEHAVIORAL APPLICATIONS IN ASD

**Course Description**

This course focuses on assessment and intervention planning for children with ASD. Candidates will enhance their knowledge of various assessments appropriate to the ASD population and develop skills to administer and interpret assessments. The course will provide candidates with an overview of the Applied Behavioral Analysis approach to assessing and teaching students with ASD.

**Credits**

3

**EDC652 - INTRO TO O&M****Long Course Title**

INTRODUCTION TO ORIENTATION AND MOBILITY

**Course Description**

Examines the psychosocial implications of blindness, with a particular focus on independence. Exploration of basic orientation mobility concepts including human guide and basic independent travel through the use of verbal description and tactile graphics.

**Credits**

3

**EDC653 - STRATEGIES FOR VI****Long Course Title**

PRACTICUM FOR TEACHING STUDENTS WITH VISUAL IMPAIRMENTS

**Course Description**

Examines the strategies used to make education accessible to students with visual impairments through the creation of high-quality accommodations and/or modifications. Topics include organization, assessment, early intervention, and the expanded core curriculum. This course is a practicum for visual impairments.

**Credits**

3

**EDC654 - INTRO TO BRAILLE****Long Course Title**

INTRODUCTION TO BRAILLE LITERACY

**Course Description**

Focused exploration of braille, braille literacy, and braille assessment.

**Credits**

3

**EDC655 - COLLAB & TRANSITION PLANNG****Long Course Title**

COLLABORATION AND TRANSITION PLANNING

**Course Description**

Using case-based instructional strategies, this course is designed to assist advanced teacher candidates in learning to build supportive relationships with families, paraprofessionals, and related service providers, including community agencies, as a foundation for designing differentiated learning experiences for students with disabilities.

**Credits**

3

**EDC656 - PROGRAMS FOR MIVI/DB****Long Course Title**

PROGRAMS FOR STUDENTS WITH VISUAL IMPAIRMENTS AND MULTIPLE DISABILITIES/DEAFBLIND

**Course Description**

Intensive examination of curricular adaptations, assessment, and intervention for students with multiple disabilities and visual impairments or deafblindness.

**Credits**

3

**EDC657 - ADVANCED BRAILLE AND AT**  
**Long Course Title**

ADVANCED BRAILLE AND ASSISTIVE TECHNOLOGY

**Course Description**

Focused exploration of the braille for use in various contexts (STEM, music, foreign language), assistive technology and STEM education for students with visual impairments.

**Credits**

3

**EDC660 - PRCTL APPLC VIS INSTR STRATEGY**  
**Long Course Title**

PRACTICAL APPLICATIONS OF VISUAL INSTRUCTIONAL STRATEGIES

**Course Description**

Advanced candidates will participate in an extensive summer clinic for children with ASD. Candidates learn how to create an appropriate learning environment, organize schedules for individual students, develop materials, engage in instruction, respond to behavioral issues, and document student progress.

**Credits**

3

**EDC662 - INT O & M SEMINAR**  
**Long Course Title**

INTERMEDIATE ORIENTATION AND MOBILITY SEMINAR

**Course Description**

Focuses on research practices and problem areas in intermediate orientation and mobility services for students with visual impairments and additional disabilities.

**Credits**

3

**EDC663 - ADV O & M SEMINAR**  
**Long Course Title**

ADVANCED ORIENTATION AND MOBILITY SEMINAR

**Course Description**

Focuses on research practices and problem areas in advanced orientation and mobility services for students with visual impairments and additional disabilities.

**Credits**

3

**EDC682 - O & M and MD****Long Course Title**

O&M AND STUDENTS WITH MULTIPLE DISABILITIES

**Course Description**

Focuses on orientation and mobility planning and instruction for students with visual impairments and other disabilities.

**Credits**

3

**EDC692 - O & M INTERNSHIP****Long Course Title**

ORIENTATION AND MOBILITY INTERNSHIP

**Course Description**

This variable hour course is the cumulative internship course where students complete the internship required to become a Certified Orientation and Mobility Specialist (COMS). The internship is composed of 350 hours working directly with a COMS.

**Credits**

1 - 3

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## Educational Leadership

**EDL601 - LEGAL, ETHICAL, CULTURAL PRIN****Long Course Title**

LEGAL, ETHICAL, AND CULTURAL PRINCIPLES

**Course Description**

A study of legal, ethical, and cultural principles as they relate to the role of the educational leader. Trends in legislation, case law, precedents, and interpretations will be explored in addition to the influence legal problems have on decisions made by educational leaders.

**Credits**

3

**EDL603 - FISCAL MGMT & SCHOOL PERSONNEL****Long Course Title**

FISCAL MANAGEMENT AND SCHOOL PERSONNEL

**Course Description**

An examination of practical school management focusing on the development of personnel and management of resources that promote the academic success and well-being of students.

**Credits**

3



**EDL604 - INSTR LEADERSHIP-DIVERSE POP****Long Course Title**

INSTRUCTIONAL LEADERSHIP FOR DIVERSE POPULATIONS

**Course Description**

Examines the cultures and practices that characterize highly effective schools, as well as instructional practices that affect student learning. Cognitive learning theory and school culture that supports student learning and achievement are explored.

**Credits**

3

**EDL605 - DATA ANALYSIS & SCHOOL IMPROV****Long Course Title**

DATA ANALYSIS AND SCHOOL IMPROVEMENT

**Course Description**

Examines curriculum, instruction, and data analysis as it is connected to improved student learning, emphasizing the link of student achievement data to decision-making and school improvement. Examines the importance of a guaranteed and viable curriculum and the skills educational leaders need to develop, implement, monitor, and evaluate this type of curriculum.

**Credits**

3

**EDL606 - CULTIVATING COMMUNITY****Long Course Title**

CULTIVATING COMMUNITY THROUGH MEANINGFUL ENGAGEMENT

**Course Description**

Educational leaders learn to cultivate a school community that promotes academic success and well-being of all students.

**Credits**

3

**EDL691 - INSTR LEADER INTERNSHIP****Long Course Title**

INSTRUCTIONAL LEADERSHIP INTERNSHIP AND RESIDENCY

**Course Description**

The residency is uninterrupted service in an active school with students present for the equivalent of ten full days. The residency allows interns to experience leadership in as many of the Alabama Leadership Standard indicators as possible. Candidates shall prepare and maintain a comprehensive portfolio which indicates the level of experiences and knowledge gained in instructional leadership during the intern experience.

**Credits**

1 - 3

**EE202 - INTRO DIGITAL LOGIC DSGN****Long Course Title**

INTRODUCTION TO DIGITAL LOGIC DESIGN

**Course Description**

Engineering approaches to design and analysis of digital logic circuits. Boolean algebra, Karnaugh maps, design using Hardware Description Languages, digital computer building blocks, standard logic (SSI MSI) vs. programmable logic (PLD, PGA0, finite state machine design).

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EGR101 - INTRO COMPUTING ENGINEERS (3)

**EE203 - DIGITAL LOGIC DESIGN LAB****Long Course Title**

DIGITAL LOGIC DESIGN LAB

**Course Description**

Experiments in applying Boolean logic concepts to digital design. The course introduces students to small-scale prototyping and simulation techniques that are used to implement and evaluate digital combinational and sequential logic designs.

**Credits**

1

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)

**EE213 - ELECTRICAL CIRCUITS & SYSTEMS****Course Description**

Broad application of electrical circuits and systems for non-electrical/computer engineering majors. Topics include current, voltage, and power, Kirchoff's Laws and Ohm's Law using independent sources for DC and AC circuit analysis. Circuit analysis techniques include nodal and mesh analysis and Thevenin's Theorem. First order transient circuits using capacitors or inductors will be presented. Ideal operational amplifiers will be introduced.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - PH112 - GEN PHYSICS W/CALC II (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)

## **EE215 - ELECTRICAL CIRCUITS ANALYSIS**

### **Long Course Title**

ELECTRICAL CIRCUITS ANALYSIS

### **Course Description**

This courses provides a foundation for DC and AC circuits for electrical and computer engineering majors. Course topics include current, voltage, power for DC circuits, Kirchoff's Laws, Ohm's Law, active and passive elements, DC circuit analysis techniques, impedances, AC steady-state circuit analysis, AC power and operational amplifiers. Both independent and dependent sources will be employed in circuit applications. Students will learn techniques for maximum power transfer. DC and AC circuit analysis techniques will include nodal and mesh analysis, superposition, and Thevenin's Theorem.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - MA201 - CALCULUS III (4)
  - PH112 - GEN PHYSICS W/CALC II (3)

### **Restrictions**

This course is restricted for mechanical and aerospace engineering majors.

## **EE223 - DES & MOD ELEC CIR & SYS**

### **Long Course Title**

DESIGN AND MODELING OF ELECTRICAL CIRCUITS AND SYSTEMS

### **Course Description**

Electrical circuit and systems design and modeling. Includes using modern tools (i.e. Matlab and simulink) to design and model circuits. Introduces and reinforces engineering design principles.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

## **EE307 - ELECTRICITY & MAGNETISM**

### **Long Course Title**

ELECTRICITY & MAGNETISM

### **Course Description**

Basic concepts of electrostatics, electric potential theory, electric fields and currents, fields of moving charge, magnetic fields, time varying electromagnetic fields and Maxwell's equations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

## **EE308 - ELECTROMAGNETIC ENGR**

### **Long Course Title**

ELECTROMAGNETIC ENGINEERING

### **Course Description**

Review of Maxwell's equations, uniform plane waves in different types of media, reflection, transmission of uniform plane waves, transmission lines, waveguides, and antennas.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE307 - ELECTRICITY & MAGNETISM (3)

## **EE310 - SOLID STATE FUNDAMENTALS**

### **Long Course Title**

SOLID STATE FUNDAMENTALS

### **Course Description**

Introduction to semiconductors including crystalline structure, energy bands and charge carriers, excess carriers, and thermal properties. Introduction to semiconductor junctions, the bipolar junction transistor, and the MOSFET.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - PH113 - GEN PHYSICS W/CALC III (3)

**EE315 - INTRO ELECTRONIC ANALYS & DESGN****Long Course Title**

INTRODUCTION TO ELECTRONICS ANALYSIS AND DESIGN

**Course Description**

Properties of diode, bipolar transistors, FET and operational amplifiers, analysis of DC and AC small-signal operation and circuit models for the design and analysis of electronic circuits.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

**EE316 - ELE CIRCUITS & ELTRNC DSGN LAB****Long Course Title**

ELECTRIC CIRCUITS & ELECTRONIC DESIGN LAB

**Course Description**

Electric circuit experiments including first and second order DC circuits, maximum power transfer, impedance measurements, transformers, measurement of electronic device characteristics, and design and testing of operational amplifier circuits and single-stage amplifiers using MOSFETs and BJTs.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)

**EE382 - ANALY METH CONTINUOUS TIME SYS****Long Course Title**

ANALYTICAL METHODS FOR CONTINUOUS TIME SYSTEMS

**Course Description**

Fourier Series, Fourier and Laplace transforms with emphasis on their physical interpretation. System representation by transfer functions and impulse response functions, convolution integral, transient response, and modeling and simulation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

**EE383 - ANALY METH MULTIVARIABLE****Long Course Title**

ANALYTICAL METHODS FOR MULTIVARIABLE SYSTEMS

**Course Description**

Discrete time signals and systems, sampling techniques, Z and discrete Fourier transforms, multivariable systems. Introduction to digital signal processing.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE382 - ANALY METH CONTINUOUS TIME SYS (3)

**EE384 - DIG SIGNAL PROCESS LAB****Long Course Title**

DIGITAL SIGNAL PROCESSING LAB

**Course Description**

Design and programming of digital processing algorithms such as DFT, FFT, IIR, and FIR filtering.

**Credits**

1

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - EE383 - ANALY METH MULTIVARIABLE (3)

**EE385 - RANDOM SIGNALS & NOISE****Long Course Title**

RANDOM SIGNALS & NOISE

**Course Description**

Random variables and probabilities description of signals. Introduction to random processes such as autocorrelations, cross correlation, and power spectral density, Noise analysis of thermal, shot, white, and colored. Response of electrical systems to random inputs. .

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)
  - EE382 - ANALY METH CONTINUOUS TIME SYS (3)

**EE386 - INTRO CONTROL/ROBOTIC SYS****Long Course Title**

INTRODUCTION TO CONTROL/ROBOTIC SYSTEMS

**Course Description**

Theory and analytical techniques for modeling, analysis and control of dynamical systems. Transfer functions, block-diagrams, frequency response, stability criteria, series and feedback controller design, and digital control. Introduction to the dynamic analysis and control of robotic systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)
  - EE382 - ANALY METH CONTINUOUS TIME SYS (3)

**EE410 - SELECTED TOPICS/ECE****Long Course Title**

SELECTED TOPICS/ECE

**Course Description**

Special topics in Electrical Engineering.

**Credits**

1 - 6

**Cross-Listed Course**

EE510 - SELECTED TOPICS/ECE

**EE410L - SELECTED TOPIC LABORATORY****Long Course Title**

SELECTED TOPIC LABORATORY

**Course Description**

Complements material for EE 410

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - EE410 - SELECTED TOPICS/ECE (1 - 6)

**EE411 - ELECTRIC POWER SYSTEM****Long Course Title**

ELECTRIC POWER SYSTEM

**Course Description**

Power generation, transmission and distribution. Three-phase circuits, conventional and renewable power systems, transformers and motors, protection and control.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE382 - ANALY METH CONTINUOUS TIME SYS (3)

**EE412 - SR DSGN PROJ ELECT ENGR****Long Course Title**

SENIOR DESIGN PROJECT ELECTRICAL ENGINEERING

**Course Description**

Individual design project under the direction of an ECE faculty member.

**Credits**

1 - 6

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Instructor Permission Required

**EE414 - ANALOG & DIGITAL FILTER DESIGN****Long Course Title**

ANALOG & DIGITAL FILTER DESIGN

**Course Description**

Analog filter design via Butterworth, Chebyshev, and elliptical approximation. Active filter design using operational amplifiers. Digital filter design methods.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)
  - EE383 - ANALY METH MULTIVARIABLE (3)



**EE416 - ELECTRONICS II****Long Course Title**

ELECTRONICS II

**Course Description**

Integrated circuits and micro-devices related to multistage amplifiers, oscillators, design specifications, operational amplifiers, and microunits. Computer simulation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)

**EE417 - PHOTOVOLTAIC FUNDAMENTALS****Long Course Title**

PHOTOVOLTAIC FUNDAMENTALS

**Course Description**

The course will cover fundamental device physics for solar cell operation, reliability issues in panel and module design, partial shading problems on PV module, and cost and efficiency analysis.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE310 - SOLID STATE FUNDAMENTALS (3)

**EE418 - NONLINEAR DYNAMICS & CHAOS****Long Course Title**

NONLINEAR DYNAMICS & CHAOS

**Course Description**

An introduction to radar systems and basic radar analysis. Topics include common radar topologies and construction methods, transmission, reception and processing of radar signals that are embedded in noise. Particular focus on analysis of the radar range equation and its various terms.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)
  - EE382 - ANALY METH CONTINUOUS TIME SYS (3)

**Cross-Listed Course**

EE518 - NONLINEAR DYNAMICS & CHAOS

**EE421 - ANTENNA DESIGN & ANALYSIS****Long Course Title**

ANTENNA DESIGN & ANALYSIS

**Course Description**

Covers analytical methods and mathematical foundations for solving antenna radiation problems, based on Maxwell's equations. Different types of antennas will be studied, including wire, phased array, aperture, microstrip, and reflector antennas.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE308 - ELECTROMAGNETIC ENGR (3)

**EE424 - INTRO DATA COMMUN NETWORKS****Long Course Title**

INTRODUCTION TO DATA COMMUNICATION NETWORKS

**Course Description**

Overview of historic development of modern telephone and data communication systems, system architecture, standards, broadband switching systems, modems, protocols, personal and mobile communications, digital modulation techniques.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE383 - ANALY METH MULTIVARIABLE (3)
  - EE385 - RANDOM SIGNALS & NOISE (3)

**Cross-Listed Course**

EE504 - INTRO DATA COMMUNICA NETWORKS

**EE426 - COMMUNICATION THEORY****Long Course Title**

COMMUNICATION THEORY

**Course Description**

Signals and systems including the Hilbert transform, cross and auto correlation, power density spectrum, and the Wiener-Khintchine theorem. Filter design. Linear and nonlinear modulation and demodulation methods and circuits. Phase lock and frequency feedback techniques.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)
  - EE382 - ANALY METH CONTINUOUS TIME SYS (3)

**Cross-Listed Course**

EE506 - COMMUNICATION THEORY

**EE436 - DIGITAL ELECTRONICS****Long Course Title**

DIGITAL ELECTRONICS

**Course Description**

Introduction to digital electronics. The Metal-Oxide-Semiconductor (MOS) transistor. MOS inverters and gate circuits. Bipolar junction transistors, ECL inverters, and bipolar digital gates. Semiconductor Memories.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)

**Cross-Listed Course**

EE516 - DIGITAL ELECTRONICS

**EE451 - OPTOELECTRONICS****Long Course Title**

OPTOELECTRONICS

**Course Description**

Basic concepts for understanding electro-optic devices and systems. Blackbody radiation, light sources, quantum and thermal detectors, noise in detectors, optical heterodyning, acousto-optic, magneto-optic, and electro-optic modulation.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - EE307 - ELECTRICITY & MAGNETISM (3)
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)

**Equivalent Course(s)**

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OPT444 - OPTOELECTRONICS

**EE453 - LASER SYSTEMS****Long Course Title**

LASER SYSTEMS

**Course Description**

Spontaneous and stimulated emission, population inversion, optical resonators, three- and four-level systems, Q-switching and mode-locking, semiconductor lasers, integrated optic waveguides and couplers, scanning systems, high-power industrial application.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE307 - ELECTRICITY & MAGNETISM (3)

**Equivalent Course(s)**

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**Cross-Listed Course**

EE553 - LASER SYSTEMS

## **EE454 - OPTICAL FIBER COMMUNICATIONS**

### **Long Course Title**

OPTICAL FIBER COMMUNICATIONS

### **Course Description**

Introduction to optical fibers and their transmission characteristics, optical fiber measurements, sources and detectors, noise considerations for digital and analog communication, and optical fiber systems.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - EE307 - ELECTRICITY & MAGNETISM (3)
    - PH432 - INTERM ELECTRIC & MAGNETISM II (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - EE382 - ANALY METH CONTINUOUS TIME SYS (3)
    - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)

### **Equivalent Course(s)**

### **Cross-Listed Course**

EE534 - OPTICAL FIBER COMMUNICATIONS

## **EE486 - INTRO MODERN CONTROL SYSTEMS**

### **Long Course Title**

INTRODUCTION TO MODERN CONTROL SYSTEMS

### **Course Description**

Modern control theory including techniques for modeling, analysis and control of MIMO dynamic systems, state-variable feedback control design and state observers. Kalman-filtering. Fundamentals of nonlinear systems analysis and discrete-time system modeling, analysis and control.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE386 - INTRO CONTROL/ROBOTIC SYS (3)

## **EE494 - EE DESIGN PROJECTS**

### **Long Course Title**

EE DESIGN PROJECTS

### **Course Description**

Senior Capstone Course. Design, simulation, and construction of technical projects. Review of legal, economic, and ethical issues. Students work as individuals or teams to design, implement, test, and evaluate their projects. Oral presentation and written reports are required. Senior Standing.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Earn a minimum grade of C- in all of the following:
    - EE223 - DES & MOD ELEC CIR & SYS (3)
    - EE307 - ELECTRICITY & MAGNETISM (3)
    - EE315 - INTRO ELECTRONIC ANLYS & DESGN (3)
    - EE383 - ANALY METH MULTIVARIABLE (3)
    - EE385 - RANDOM SIGNALS & NOISE (3)
    - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
    - ISE321 - ENGINEERING ECONOMY (3)
  - Must have a class standing of Senior

## **EE497 - ELEC ENGR INTERNSHIP**

### **Long Course Title**

ELECTRICAL ENGINEERING INTERNSHIP

### **Course Description**

Active involvement in an engineering project in an engineering enterprise, professional organization, or government agency that has particular interest and relevance in the student.

### **Credits**

1 - 3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSEE ENG
  - Must have a class standing of Junior or higher
  - Instructor Permission Required

**EE504 - INTRO DATA COMMUNICA NETWORKS****Long Course Title**

INTRO DATA COMMUNICATION NETWORKS

**Course Description**

Overview of historic development of modern telephone and data communication system, system architecture, standards, broadband switching systems, modems, protocols, personal and mobile communications, digital modulation techniques.

**Credits**

3

**Equivalent Course(s)**

EE424 - INTRO DATA COMMUN NETWORKS

**EE506 - COMMUNICATION THEORY****Long Course Title**

COMMUNICATION THEORY

**Course Description**

Review of elementary signals and systems including the Hilbert transform, cross and auto correlation, power density spectrum, and the Wiener-Khintchine theorem. Butterworth and Chebyshev lowpass filters. Bandpass signals and systems. The lowpass equivalent of a bandpass signal/system. Commonly used forms of linear and nonlinear modulation. Demodulation methods and circuits. Phase lock and frequency feedback techniques.

**Credits**

3

**Equivalent Course(s)**

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**Cross-Listed Course**

EE426 - COMMUNICATION THEORY

**EE510 - SELECTED TOPICS/ECE****Long Course Title**

SELECTED TOPICS/ECE

**Credits**

1 - 6

**Cross-Listed Course**

EE410 - SELECTED TOPICS/ECE

**EE514 - ANALOG & DIGITAL FILTER DESIGN****Long Course Title**

ANALOG & DIGITAL FILTER DESIGN

**Course Description**

Analog filter design via Butterworth, Chebyshev, and elliptical approximation. Active filter design using operational amplifiers. Digital filter design methods.

**Credits**

3

**EE516 - DIGITAL ELECTRONICS****Long Course Title**

DIGITAL ELECTRONICS

**Course Description**

Introduction to digital electronics. The Metal-Oxide-Semiconductor (MOS) transistor. MOS inverters and gate circuits. Bipolar junction transistors, ECL inverters, and bipolar digital gates. Semiconductor memories. Circuit design for VLSI.

**Credits**

3

**Cross-Listed Course**

EE436 - DIGITAL ELECTRONICS

**EE518 - NONLINEAR DYNAMICS & CHAOS****Long Course Title**

NONLINEAR DYNAMICS & CHAOS

**Course Description**

Topics: system stability, linearization, equilibrium/steady-state solutions, bifurcations, periodic solutions, limit cycles, oscillators, chaos, iterated maps and chaos control/synchronization. Various tools and methods used for analysis and design of nonlinear circuits and systems will be covered. Students should have prerequisite knowledge of electronics and signals and systems such as covered in EE 315 and EE 382.

**Credits**

3



**EE521 - ANTENNA DESIGN & ANALYSIS****Long Course Title**

ANTENNA DESIGN & ANALYSIS

**Course Description**

Covers analytical methods and mathematical foundations for solving antenna radiation problems, based on Maxwell's equations. Different types of antennas will be studied, including wire, phased array, aperture, microstrip, and reflector antennas. Students should have prerequisite knowledge of electromagnetics, such as that covered in EE 308.

**Credits**

3

**Cross-Listed Course**

EE421 - ANTENNA DESIGN & ANALYSIS

**EE525 - FUNDAMENTALS OF RADAR SYSTEMS****Long Course Title**

FUNDAMENTALS OF RADAR SYSTEMS

**Course Description**

An introduction to radar systems and basic radar analysis. Topics include common radar topologies and construction methods, transmission, reception and processing of radar signals that are embedded in noise. Particular focus on analysis of the radar range equation and its various terms. Students are expected to have prerequisite knowledge of signals and systems and random signals such as covered in EE 382 and EE 385.

**Credits**

3

**EE534 - OPTICAL FIBER COMMUNICATIONS****Long Course Title**

OPTICAL FIBER COMMUNICATIONS

**Course Description**

Introduction to optical fibers and their transmission characteristics, optical fiber measurements, sources and detectors, noise considerations for digital and analog communications, optical fiber systems.

**Credits**

3

**Cross-Listed Course**

EE454 - OPTICAL FIBER COMMUNICATIONS

**EE541 - OPTICS I**  
**Long Course Title**

OPTICS I

**Course Description**

Foundations and physics of geometrical optics, Fermat's principles and Huygen wavelets, refraction and reflection. The many forms of Snell's Law. Optical path lengths, geometrical wavefronts and rays. Ray tracing, ynu-chart and matrix methods. Gaussian imagery and paraxial optics, conjugate elements, cardinal points, and image-object relations. Stops and pupils, chief and marginal rays, vignetting, and the optical or Lagrange invariant. The y-ybar diagram, design of common systems: objectives, magnifiers, microscopes, collimators and detectors. Optical glasses and chromatic aberrations, wavefront and transverse aberrations, spot diagrams and ray fan plots.

**Credits**

3

**Equivalent Course(s)**

OSE541 - GEOMETRICAL OPTICS  
PH541 - GEOMETRICAL OPTICS

**EE542 - PHYSICAL OPTICS**  
**Long Course Title**

PHYSICAL OPTICS

**Course Description**

Scalar and electromagnetic waves, polarization, coherence, reflection and refraction; two beam and multiple beam interference, interferometers, Fabry-Perots, thin films, diffraction, and absorption and dispersion.

**Credits**

3

**Equivalent Course(s)**

OSE542 - PHYSICAL OPTICS  
PH542 - PHYSICAL OPTICS

**EE553 - LASER SYSTEMS**  
**Long Course Title**

LASER SYSTEMS

**Course Description**

Spontaneous and stimulated emission, population inversion, optical resonators, three- and four-level systems, Q-switching and modelocking, semiconductor lasers, integrated optic waveguides and couplers, scanning systems, high power industrial applications. Includes a research project and oral presentation.

**Credits**

3

**Cross-Listed Course**

EE453 - LASER SYSTEMS

**EE586 - INTRO MODERN CONTROL SYSTEMS****Long Course Title**

INTRODUCTION MODERN CONTROL SYSTEMS

**Course Description**

The basic ideas and techniques of modern control theory. Analytical techniques for modeling, analysis and control of MIMO dynamic systems. State variable description of dynamic systems. State variable feedback control design and state observers. Kalman-filtering. Fundamentals of nonlinear systems analysis. Introduction to discrete time system modeling, analysis and control. Basics of adaptive and optimal control. Applications to aerospace and electric power systems.

**Credits**

3

**EE603 - RANDOM SIGNALS IN COMMUNICATIO****Long Course Title**

RANDOM SIGNALS IN COMMUNICATION

**Course Description**

Random processes applied to communication and control. Concepts covered include stationarity, correlation, power spectrum, Brownian motion, thermal noise, Markov processes, and queuing theory. Emphasis on systems with noisy excitation.

**Credits**

3

**EE604 - DIGITAL IMAGE PROCESSING****Long Course Title**

DIGITAL IMAGE PROCESSING

**Course Description**

Review of digital filters. Spatial filters and realizations. Edge and wedge detectors. Derivative matrices and u-notch, r-notch filters. Periodic images, their transformation and scanning, their two-dimensional Fourier transforms. Rational vectors and image filtering.

**Credits**

3

**EE607 - ROBOTIC SYSTEMS CONTROL****Long Course Title**

ROBOTIC SYSTEMS CONTROL

**Course Description**

In-depth study of information, decision and control problems associated with robotic system design. Sensor systems, recognition and decision algorithms, kinematics and dynamics, trajectory planning, analog and digital controllers, adaptive and optimal control.

**Credits**

3

**EE609 - ELECTROMAGNETIC FIELD THEORY****Long Course Title**

ELECTROMAGNETIC FIELD THEORY

**Course Description**

Mathematical approach to electromagnetic phenomena. Basic field concepts. Radiation and propagation. Waveguides and simple radiating and scattering systems. Perturbational and variational techniques.

**Credits**

3

**EE610 - SELECTED TOPICS/ECE****Long Course Title**

SELECTED TOPICS/ECE

**Credits**

1 - 6

**Equivalent Course(s)**

CPE610 - SELECTED TOPICS IN COMPUTER EN  
PH689 - SELECTED TOPICS

**EE612 - GRADUATE DESIGN PROJECT****Long Course Title**

GRADUATE DESIGN PROJECT

**Course Description**

Graduate design project in support of an M.S.E. program.

**Credits**

3

**EE614 - DATA COMPRESSION****Long Course Title**

DATA COMPRESSION

**Course Description**

Introduction to the fundamental theories and techniques of lossless and lossy data compression. Topics include Huffman codes, arithmetic codes, Golomb-Rice code, dictionary techniques, context-based compression, scalar quantization, vector quantization, transform coding, subband coding, wavelets, compression standards, and selected advanced topics of data compression.

**Credits**

3

**EE615 - ANALOG CIRCUIT DESIGN****Long Course Title**

ANALOG CIRCUIT DESIGN

**Course Description**

Use of operational amplifiers to synthesize special-purpose filters and circuits for analog signal processing and conditioning; linear and switching power supplies; high-frequency effects; circuits for transmitters and receivers; digital circuits from an analog viewpoint; A/D and D/A converters; selected topics.

**Credits**

3

**EE616 - MICROELECT DEV/INTE CIRC****Long Course Title**

MICROELECTRONIC DEVICES/INTEGRATED CIRCUITS

**Course Description**

Analysis and design of microelectronic devices for integrated circuits. Properties of semiconductors important to microelectronic device operation. Analysis and modeling of MOS devices and circuits. Analysis and modeling of metal semiconductor devices, junction diodes, bipolar transistors. Device fabrication technology.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE516 - DIGITAL ELECTRONICS (3)

**EE617 - VLS INTEGRATION DEVICES****Long Course Title**

VLS INTEGRATION DEVICES

**Course Description**

Operation and modeling of the MOS transistor. Second-order considerations for a MOSFET, VLSI device fundamentals and scaling laws. Micron-length and submicron-length semiconductor devices. Basic technology and applications of VLSI. Impact of VLSI on computer architecture. VLSI computer aided design.

**Credits**

3

**EE618 - VLSI CIRCUITS****Long Course Title**

VLSI CIRCUITS

**Course Description**

MOS device electronics. MOS processing and design rules. Circuit design with MOSFETS. MOS circuit technique. Combinational logic gate in CMOS. Pseudo-NMOS logic gates. Very high performance digital circuits. Sequential logic circuits. Designing semiconductor memories. Low power CMOS VLSI circuit design.

**Credits**

3

**EE619 - RADAR SYSTEMS****Long Course Title**

RADAR SYSTEMS

**Course Description**

Radar range equation, noise and noise figure, radar losses, false alarm and detection probability, detection probability improvement techniques, matched filter theory, ambiguity function.

**Credits**

3

**Prerequisites**

- 3 hours from:
  - EE525 - FUNDAMENTALS OF RADAR SYSTEMS (3)

**EE620 - CMOS ANALOG CIRCUIT DESIGN****Long Course Title**

CMOS ANALOG CIRCUIT DESIGN

**Course Description**

Analog circuit design in CMOS technology. CMOS processing technology. MOS transistor modeling. Basic current mirrors and single-stage amplifiers. Noise analysis and modeling. Basic OpAmp design and compensation. Advanced current mirrors and OpAmps. Bandgap references. Oscillators. CMOS technology characterization for radio-frequency (RF) design.

**Credits**

3

**Equivalent Course(s)**

CPE625 - CMOS ANALOG CIRCUIT DESIGN

**EE622 - HARDWARE RELIABILITY****Long Course Title**

HARDWARE RELIABILITY

**Course Description**

The objective for this course is to provide students with an understanding of the essential reliability physics of electronic devices as well as some of the practical technological considerations.

**Credits**

3

**EE629 - ANAL & COMP METH IN ELEC ENG I****Long Course Title**

ANALYTIC & COMPLEX METHODS IN ELECTRICAL ENGINEERING I

**Course Description**

Analytic and numerical solution techniques applicable to problems arising in engineering, utilizing complex variable theory, linear algebra, matrix theory, and transform methods.

**Credits**

3

**EE630 - ANAL & COMP METHODS ELEC EG II****Long Course Title**

ANALYTIC & COMPLEX METHODS IN ELECTRICAL ENGINEERING II

**Course Description**

Analytical and numerical solution techniques applicable to problems arising in electrical engineering. Partial differential equations, vector differential and integral calculus, special functions, Fourier analysis with applications and integral equations.

**Credits**

3

**EE632 - FOURIER OPTICS****Long Course Title**

FOURIER OPTICS

**Course Description**

Introducing the optical system as an invariant linear system, convolution, Sommerfield's diffraction integral, Fourier Transform, angular spectrum, coherent and incoherent imaging, optical transfer function.

**Credits**

3

**Equivalent Course(s)**

OSE632 - FOURIER OPTICS

PH632 - FOURIER OPTICS

**EE633 - ELECTRO-OPTICAL ENGINEER****Long Course Title**

ELECTRO-OPTICAL ENGINEER

**Course Description**

Propagation of optical beams in homogeneous and guiding media, optical resonators, and spectrum analyzers, theory of laser oscillation, some specific laser systems, parametric oscillators, electro-optical and acousto-optical modulators.

**Credits**

3

**EE642 - DATA & DIGITAL COMMUNICATION****Long Course Title**

DATA & DIGITAL COMMUNICATION

**Course Description**

Introduction to digital and data communications; transmission channels; modulation and coding; telephone networks; data communication standards; noise and distortion; computer interfacing; protocols.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE603 - RANDOM SIGNALS IN COMMUNICATIO (3)

**EE648 - DIGITAL SIGNAL PROCESSING****Long Course Title**

DIGITAL SIGNAL PROCESSING

**Course Description**

Theory and applications of signal processing by digital techniques. Difference equations, Z-transform theory, digital-filter design, fast Fourier transform, quantization effects, and discrete estimation. Applications in digital filtering, signal processing, data analysis and smoothing, and image processing. Students should have prerequisite knowledge of signals and systems as covered in EE 383.

**Credits**

3

**EE696 - GRAD INTERN EE ENGR****Long Course Title**

GRADUATE INTERNSHIP EE ENGR

**Course Description**

Active involvement in an engineering project in an engineering enterprise, professional organization or government agency that has particular interest and relevance to the graduate student.

**Credits**

1 - 9

**Prerequisites**

- Instructor Permission Required



**EE699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for M.S.E. students. A maximum of nine hours of credit is awarded upon successful completion of master's thesis. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

**EE700 - SAMPLED DATA CONT SYS****Long Course Title**

SAMPLED DATA CONTROL SYSTEMS

**Course Description**

Classical and modern methods for analysis and design of sampled data-control systems; Ztransforms, transport lags, z and w plane analysis, state variables, and the transition matrix.

**Credits**

3

**EE701 - ADV LINEAR CONTROL THRY****Long Course Title**

ADVANCED LINEAR CONTROL THEORY

**Course Description**

Modern techniques for analysis and design of linear control systems. Matrix formulation, multivariable control systems, state variable concepts. Linear transformation, controllability, observability, discrete-time systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE586 - INTRO MODERN CONTROL SYSTEMS (3)

**EE704 - NONLINEAR CONTROL SYSTEM****Long Course Title**

NONLINEAR CONTROL SYSTEM

**Course Description**

Classical and modern methods for analysis and design of nonlinear automatic control systems. State variables, phase plane, limit cycles, stability, describing functions, relay control, stabilization theory.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE701 - ADV LINEAR CONTROL THRY (3)

**EE705 - THEORY OPTIMAL CONTROL****Long Course Title**

THEORY OPTIMAL CONTROL

**Course Description**

General theory of optimal control of dynamic processes. Calculus of variations. Hamilton-Jacobi theory. Pontryagin's maximum principle, dynamic programming.

**Credits**

3

**EE706 - KALMAN FILTERS****Long Course Title**

KALMAN FILTERS

**Course Description**

Review of continuous and discrete time systems, random variables and processes; matrix random processes; derivation of the first order, linear Kalman filter; derivation of the linear vector Kalman filter; derivation of the extended Kalman filter; design and implementation of specific Kalman filters.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EE586 - INTRO MODERN CONTROL SYSTEMS (3)
  - EE525 - FUNDAMENTALS OF RADAR SYSTEMS (3)

**EE707 - INFORMATION THEORY****Long Course Title**

INFORMATION THEORY

**Course Description**

Self-information, entropy, mutual information, and channel capacity, encoding, error detecting and correcting codes. Sampling theorem. Discrete and continuous channels.

**Credits**

3

**EE710 - SELECTED TOPICS/ECE****Long Course Title**

SELECTED TOPICS/ECE

**Credits**

1 - 6

**EE711 - ANTENNA THEORY****Long Course Title**

ANTENNA THEORY

**Course Description**

Antennas and antenna arrays. Radiation patterns and impedance characteristics. Spheres, cylinders, horns, slots, microwave lenses, traveling-wave, and frequency independent antennas.

**Credits**

3

**EE721 - ROBUST AND ADAPTIVE CONTROL****Long Course Title**

ROBUST AND ADAPTIVE CONTROL

**Course Description**

Introduction to fundamental ideas of robust and adaptive control. Effects of parameter and disturbance uncertainties, H-infinity and mu-synthesis ideas; parameter estimation techniques; adaptive control algorithms; stability considerations; model-reference and linear adaptive control techniques.

**Credits**

3

## **EE722 - SLIDING MODE CONTROL**

### **Long Course Title**

SLIDING MODE CONTROL

### **Course Description**

The basic and advanced theories and analytical techniques for modeling and analysis of systems dynamics in sliding manifolds. Traditional and High Order Sliding mode controller design. Discontinuous and equivalent control, robustness. Applications to control of electro-mechanical systems, reusable launch vehicle, air craft, spacecraft, and DC-to-DC power converters.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE701 - ADV LINEAR CONTROL THRY (3)

## **EE723 - RADAR TRACKING**

### **Long Course Title**

RADAR TRACKING

### **Course Description**

Alpha-Beta and Alpha-Beta-Gamma track filters, range, angle, Doppler frequency measurement and discriminators; implementation of range, angle, Doppler, and combined range/angle/Doppler trackers; tracking the presence of multipath, multiple target effects.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE619 - RADAR SYSTEMS (3)

## **EE724 - RADAR WAVEFORMS & SIGNAL PROCE**

### **Long Course Title**

RADAR WAVEFORMS & SIGNAL PROCESSING

### **Course Description**

Stretch Processing. Synthetic Aperture Radar and SAR signal processing, Space-time adaptive processing (STAP). Phase coded waveforms and processing. Frequency hop waveforms

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE619 - RADAR SYSTEMS (3)

**EE725 - ADVANCED RADAR TECHNIQUE****Long Course Title**

ADVANCED RADAR TECHNIQUES

**Course Description**

Modern radar systems for search and tracking are analyzed with emphasis on signal processing. Modeling and simulation of system and environment. Advanced techniques include CFAR, binary modulation, frequency agility, polarization agility, and synthetic aperture.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE619 - RADAR SYSTEMS (3)

**EE726 - DECIS/ESTIMATION THEORY****Long Course Title**

DECISION/ESTIMATION THEORY

**Course Description**

Classical detection theory, including maximum likelihood, Neyman-Pearson, Bayes and minimax criteria. Estimation theory concepts and criteria, linear estimators, Kalman filters, maximum likelihood and least-squares estimator, matched filters, Cramer-Rao lower bound. Introduction to pattern recognition.

**Credits**

3

**EE742 - WIRELESS COMMUNICATIONS****Long Course Title**

WIRELESS COMMUNICATIONS

**Course Description**

Design and analysis of wireless transmission systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE642 - DATA & DIGITAL COMMUNICATION (3)

**EE744 - ERROR CONTROL CODING****Long Course Title**

ERROR CONTROL CODING

**Course Description**

Linear block coding techniques, convolutional codes and the Viterbi decoding algorithm, iterative decoding algorithms and the codes to which they are applied, including Turbo Codes, Low-Density Parity-Check Codes, and Serially-Concatenated Codes.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE504 - INTRO DATA COMMUNICA NETWORKS (3)

**EE799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on doctoral dissertation. The 0 hour option is only available to students who have successfully defended their dissertation and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

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## Engineering

**EGR101 - INTRO COMPUTING ENGINEERS****Course Description**

Introduces students to the fundamental principles of programming for solving engineering problems. It familiarizes students with the process of computational thinking and the translation of real-life engineering to computational problems. Languages may include Matlab, Python, and others as appropriate.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - Student must have the following placement: Math Level 2 (PLMA 2000)

**EGR105 - INTRODUCTION TO AERONAUTICS****Long Course Title**

INTRODUCTION TO AERONAUTICS

**Course Description**

Introduction to a variety of aviation subjects, including flight physiology, computer systems, aerodynamics, aeronautics, jet propulsion, thermodynamics, navigation, and survival skills. Lectures and simulated missions. Offered in cooperation with U.S. Space & Rocket Center. Prerequisite: Available only to high-school students with U.S. citizenship enrolled in Aviation Challenge® Mach III.

**Credits**

1

**EGR109 - ENG ORG****Course Description**

Immersive experience with an Engineering Student Organization to develop an interest in engineering as a profession. Participate in a semester project, develop leadership and team work skills, give back to the community, network with professionals, and learn engineering design skills.

**Credits**

1

**EGR299 - ENGINEERING MENTORING I****Long Course Title**

ENGINEERING MENTORING I

**Course Description**

Yearly mentoring and advising from engineering faculty and staff.

**Credits**

0

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)

**EGR399 - ENGINEERING MENTORING II****Long Course Title**

ENGINEERING MENTORING II

**Course Description**

Yearly mentoring and advising from engineering faculty and staff.

**Credits**

0

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - EGR299 - ENGINEERING MENTORING I
  - Complete 1 of the following
    - Earn a minimum grade of C- in at least 1 of the following:
      - CE272 - DYNAMICS (3)
      - MAE272 - DYNAMICS (3)
      - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)
      - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
    - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
      - EE382 - ANALY METH CONTINUOUS TIME SYS (3)
      - ISE391 - PROB/ENGR STAT II (3)

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## Engineering Management

**EM660 - ENGR MGMT THEORY****Course Description**

Comparison of classical management principles and theory with the current systems in high technology, research and development, and other scientific-engineering organizations. Use of people systems to accomplish goals in high technology organizations. Cases used to illustrate contemporary problems and environments.

**Credits**

3

**EM666 - ENGR PROJECT MANAGEMENT****Long Course Title**

ENGINEERING PROJECT MANAGEMENT

**Course Description**

Management and control of multifaceted engineering and technological projects. Coordination and interactions between client and various service organizations. Project manager selection. Typical problems associated with various phases of project life cycle. Case studies illustrate theories and concepts.

**Credits**

3

**EM679 - SELECTED TOPICS IN ENGR MGMT****Credits**

3 - 9



**EM697 - ENGR MANAGEMENT PROJECT I****Course Description**

Application-oriented student project designed to show competence in engineering management.

**Credits**

3 - 9

**EM699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for M.S.E. students. A maximum of 9 hours of credit is awarded upon successful completion of master's thesis. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

**EM747 - STRATEGIC ENGINEERING MGT****Course Description**

Analysis of creating an organizational strategy for engineering and technology-based enterprises; identifying critical value streams and creating supplier and customer partnerships. Development of skills for leadership and management of innovation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EM660 - ENGR MGMT THEORY (3)

**EM760 - ENGR MGMT STRUCTURES & SYSTEMS****Course Description**

The course studies the impact of various organization structures in relation to the goals of high technology enterprises. Use and effectiveness of contemporary organizational systems as related to the knowledge worker. Cases used to illustrate contemporary problems and environments.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EM660 - ENGR MGMT THEORY (3)

**EM761 - EVOL THRY ENG MGMT/IND SYS ENG****Course Description**

Development of applicable engineering management or industrial & systems engineering using classical concepts, contemporary studies, and practices at successful technology-based organizations.

**Credits**

3

**Equivalent Course(s)**

ISE761 - EVOL THRY ENG MGMT/IND SYS ENG

**EM766 - MANAGING CHG IN HIGH TECH ORG****Course Description**

Challenges to implementing advanced technology equipment, systems, and methods in engineering organizations. Justifying technology, assimilating change, changing management roles, personnel practices and organizational structure, and dealing with impact of new technologies on business policies and strategic planning.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EM666 - ENGR PROJECT MANAGEMENT (3)

**EM779 - SELECTED TOPICS IN ENGR MGMT****Credits**

3 - 9

**EM799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is working and receiving direction on a doctoral dissertation. The 0 hour option is only available to students who have successfully defended their dissertation and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

**ET101 - ENGINEERING TECH FNDNS I****Long Course Title**

ENGINEERING TECHNOLOGY FOUNDATIONS I

**Course Description**

An introduction to the Engineering Technology profession, resources and skills. Students will learn about engineering design, communication, professional ethics, and basic principles and physical laws used to understand and solve engineering related problems.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA171 - CALCULUS I (4)
  - MA171S - CALCULUS I S-SECTION (4)
  - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

**ET302 - ENGINEERING TECH FNDNS II****Long Course Title**

ENGINEERING TECHNOLOGY FOUNDATIONS II

**Course Description**

A follow-on to ET 301, the course introduces the Engineering Technology profession, resources and skills. Students will learn about computational engineering tools, graphical communication, characteristics of materials, in addition to the mathematical and statistical methods used to understand and solve engineering-related problems.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - ET101 - ENGINEERING TECH FNDNS I (3)

## **ET305 - ENGINEERING COMMUNICATION**

### **Long Course Title**

ENGINEERING COMMUNICATION

### **Course Description**

Students will learn to communicate professionally in an engineering/technical environment. Students will develop written communication such as letters, memos, reports and proposals, create clear process descriptions and instructions, and deliver persuasive and effective oral presentations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

## **ET310 - COMPUTER-AIDED DESIGN**

### **Long Course Title**

COMPUTER-AIDED DESIGN

### **Course Description**

An introduction to Computer-Aided Design (CAD) using Creo Parametric. Covers basic concepts of 3D modeling techniques and frequently used commands required to advance from a novice to an intermediate user level of Creo Parametric. MAE 211 accepted as a substitute.

### **Credits**

3

## **ET314 - QUALITY CONTROL TECHNIQUES**

### **Long Course Title**

QUALITY CONTROL TECHNIQUES

### **Course Description**

This course will blend statistical quality control concepts and hands-on training in the methods, standards and guidelines currently being used for industrial quality control includes quality management systems such as ISO 9000 and Six Sigma and the design and application of control charts. ISE 423 accepted as a substitute.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MA181 - INTRODUCTION TO STATISTICS (3)
    - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - Must have a class standing of Sophomore or higher

## **ET334 - PRINCIPLES OF STATICS**

### **Long Course Title**

PRINCIPLES OF STATICS

### **Course Description**

Develop an undertaking of the principles of statics. Topics include resultant and equilibrium of noncurrent and concurrent forces, force analysis of structures and machines, force systems in space, friction, centers of gravity, centroids, and movement of inertia of areas. MAE 271 and CE 271 accepted as a substitute for ET 334. ET 334 can not be used as a substitute for MAE 271 or CE 271.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ET302 - ENGINEERING TECH FNDNS II (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - Physics
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - PH101 - GENERAL PHYSICS I (4)
    - Earn a minimum grade of C- in all of the following:
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH114 - GENERAL PHYSICS LAB I (1)

## **ET335 - STRENGTH OF MATERIALS**

### **Course Description**

Comprehend and compare the behavior of solid objects subjected to various stresses and strains. Topics include stress and strain for axial loads, shear stresses and strains in torsional members, bending and deflection of beams, combined stress, structural connections and factors of safety. ET 335 can not be used as a substitute for MAE 370.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ET310 - COMPUTER-AIDED DESIGN (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ET334 - PRINCIPLES OF STATICS (3)
    - CE271 - STATICS (3)
    - MAE271 - STATICS (3)

## **ET336 - PRINCIPLES OF DYNAMICS**

### **Long Course Title**

PRINCIPLES OF DYNAMICS

### **Course Description**

Learn the principles of Dynamics based on two broad areas of study, Kinematics and Kinetics. Kinematics is the study of the geometry of motion. Kinetics is the study of the relation between the forces acting on a body, the mass of the body, and the motion of the body. MAE 272 or CE 272 can be substituted for ET 336.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - ET334 - PRINCIPLES OF STATICS (3)
  - CE271 - STATICS (3)
  - MAE271 - STATICS (3)

## **ET350 - ELECTRICAL CIRCUITS & SYSTEMS**

### **Course Description**

This course introduces the major topics related to electrical circuits and systems and demonstrates how electrical engineering concepts are applied in other fields and everyday products. Topics include basic circuit analysis, digital systems, electronic devices and circuits, and electromechanics. EE 213 can be substituted for ET 350. ET 350 can not be substituted for EE 213.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ET302 - ENGINEERING TECH FNDNS II (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA171 - CALCULUS I (4)
  - Physics
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - PH102 - GENERAL PHYSICS II (4)
    - Earn a minimum grade of C- in all of the following:
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH115 - GENERAL PHYSICS LAB II (1)

**ET395 - SPECIAL TOPICS IN ET****Long Course Title**

SPECIAL TOPICS IN ENGINEERING TECHNOLOGY

**Course Description**

This is a variable credit course, depending on topic chosen to be covered. Most courses will be offered as 3 credits. Topics chosen will be relativant to Engineering Technology and will focus on emerging technologies and possible future concentration offerings. Prerequisites will vary depending on topic chosen.

**Credits**

1 - 3

**Prerequisites**

- Instructor Permission

**ET425 - FUNDAMENTALS OF MANUFACTURING****Long Course Title**

FUNDAMENTALS OF MANUFACTURING

**Course Description**

This course introduces the fundamentals of manufacturing, examining the selection and use of various materials, processes, and systems.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ET310 - COMPUTER-AIDED DESIGN (3)
    - ET314 - QUALITY CONTROL TECHNIQUES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ET335 - STRENGTH OF MATERIALS (3)
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)

## **ET433 - INSTRUMENTATION & MEASUREMENT**

### **Course Description**

Prepares students to design experiments and measurement systems. Topics include the essential characteristics of instruments, electrical measurement systems and computerized data acquisition systems.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ET314 - QUALITY CONTROL TECHNIQUES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ET350 - ELECTRICAL CIRCUITS & SYSTEMS (3)
    - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)

### **Corequisites**

- Concurrently enrolled in:
  - ET434 - INSTRUMENT & MEASUREMENT LAB (1)

## **ET434 - INSTRUMENT & MEASUREMENT LAB**

### **Long Course Title**

INSTRUMENT & MEASUREMENT FOR ENGINEERING TECHNOLOGY LAB

### **Course Description**

Prepares students to design experimental projects and measurement systems. Topics include the essential characteristics of instruments, electrical measurement systems, and computerized data acquisition systems.

### **Credits**

1

### **Corequisites**

- Concurrently enrolled in:
  - ET433 - INSTRUMENTATION & MEASUREMENT (3)

## **ET495 - INTERNSHIP FOR ENG TECHNOLOGY**

### **Long Course Title**

INTERNSHIP FOR ENGINEERING TECHNOLOGY

### **Course Description**

Provides hands-on experience in an engineering-technology field. The experience must include a suitable academic component evaluated by a faculty-advisor. Students must complete the internship approval process and be registered for the internship prior to the start of the internship.

### **Credits**

1 - 3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ET305 - ENGINEERING COMMUNICATION (3)
  - Must have a class standing of Junior or higher



**ET498 - PROJECT MANAGEMENT FOR ET**  
**Long Course Title**

PROJECT MANAGEMENT FOR ENGINEERING TECHNOLOGY

**Course Description**

Acquire the basics of project management including planning, managing cost, schedule, and scope of a project in a risk-filled environment over a project lifecycle. This is the first of a two-semester capstone progression. ET 498 must be taken the semester before ET 499.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - ET305 - ENGINEERING COMMUNICATION (3)
    - ET314 - QUALITY CONTROL TECHNIQUES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ET310 - COMPUTER-AIDED DESIGN (3)
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ET334 - PRINCIPLES OF STATICS (3)
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ET350 - ELECTRICAL CIRCUITS & SYSTEMS (3)
    - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)

**ET499 - CAPSTONE FOR ENGINEERING TECH**  
**Long Course Title**

CAPSTONE FOR ENGINEERING TECHNOLOGY

**Course Description**

In this capstone course students demonstrate their ability to apply both technical and non-technical skills in solving problems appropriate to the discipline including: designing components, systems and/or processes, conducting tests, communicating results, and functioning effectively on teams.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - ET498 - PROJECT MANAGEMENT FOR ET (3)

**EH101 - COLLEGE WRITING I****Long Course Title**

COLLEGE WRITING I

**Course Description**

Introduction to academic writing, critical reading, and rhetorical knowledge.

**Credits**

3

**Prerequisites**

- Student must have the following placement: English Level 1 (PLEH 0101)

**Equivalent Course(s)**

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**Charger Foundations**

Area I: Freshman Composition

**EH101L - STUDIO FOR COLLEGE WRITING I****Long Course Title**

STUDIO FOR COLLEGE WRITING I

**Course Description**

A writing workshop/lab to be taken concurrently with EH 101. The course provides supplementary instruction and practice in written English language skills, editing techniques, writing strategies (brainstorming, drafting, revising editing) as well as critical reading, skimming, scanning, inferring) for students needing additional support. Attendance in EH 101L is required to pass EH 101

**Credits**

0

**Prerequisites**

- Students admitted to UAH as test-optional must register for a concurrent lab, EH101L, to accompany their EH101 course. Appeals to this placement can be made by taking the Composition Placement Test or by utilizing a Placement survey and submitted writing sample

**Corequisites**

- Concurrently enrolled in:
  - EH101 - COLLEGE WRITING I (3)

**EH102 - COLLEGE WRITING II****Long Course Title**

COLLEGE WRITING II

**Course Description**

Intermediate academic writing. Focuses on research questions and techniques, as well as critical engagement with published and student texts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EH101 - COLLEGE WRITING I (3)

**Charger Foundations**

Area I: Freshman Composition

**EH103 - ACCELERATED COLLEGE WRITING****Long Course Title**

ACCELERATED COLLEGE WRITING

**Course Description**

Accelerated introduction to academic writing, critical reading, and research questions. Focuses on research questions and techniques, as well as critical engagement with published and student texts.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum High School GPA 3.5
  - Minimum 26 on ACT or minimum 1170 on SAT
  - Student must have the following placement: English Level 3 (PLEH 0103)

**Charger Foundations**

Area I: Freshman Composition

**EH105 - HONORS ENGLISH SEMINAR****Long Course Title**

HONORS ENGLISH SEMINAR

**Course Description**

Interpretive and comparative readings in texts of enduring intellectual, esthetic, and ethical importance; critical and analytic writing and research projects. Minimum grade of C- required to advance to 200-level English classes.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

**Charger Foundations**

Area I: Freshman Composition

**EH207 - READINGS LITERATURE/CULTURE I****Long Course Title**

READINGS IN LITERATURE & CULTURE I

**Course Description**

Critical analysis of texts from ancient times through the Age of Discovery. The course introduces students to the methods of literary study through an examination of works in their social, historical, and philosophical contexts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

**Charger Foundations**

Area II: Literature

## **EH208 - READINGS LITERATURE/CULTURE 2**

### **Long Course Title**

READINGS IN LITERATURE & CULTURE II

### **Course Description**

Critical analysis of texts from the Age of Discovery through the present. The course introduces students to the methods of literary study through an examination of works in their social, historical, and philosophical contexts.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

### **Charger Foundations**

Area II: Literature

## **EH211 - INTRO CREATIVE WRITING**

### **Long Course Title**

INTRODUCTION TO CREATIVE WRITING

### **Course Description**

Students will discuss contemporary stories/poems and will participate in workshops, where their own poetry and fiction is examined and critiqued by the class and instructor. The class culminates in two revision portfolios (one fiction and one poetry).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

## **EH241 - LITERATURE WITHOUT BORDERS**

### **Long Course Title**

LITERATURE WITHOUT BORDERS

### **Course Description**

Reading, discussing, analyzing, and writing about literature without borders (might include global perspectives, transnational literature, travel memoirs, etc.) This course covers multiple literary genres, at least two historical periods, diverse authors, and explores various cultural contexts; this course is designed for students of all majors.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

### **Charger Foundations**

Area II: Literature

## **EH242 - MYTHOLOGY**

### **Long Course Title**

MYTHOLOGY

### **Course Description**

Reading, discussing, analyzing, and writing about the topic of mythology (might include classical and/or modern myths, non-western traditions, folktales, etc.,) This course covers multiple literary genres, at least two historical periods, diverse authoris, and explores various cultural contexts; this course is designed for studetns of all majors.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

### **Charger Foundations**

Area II: Literature

**EH243 - PROTEST LITERATURE****Long Course Title**

PROTEST LITERATURE

**Course Description**

Reading, discussing, analyzing, and writing about protest literature (might include transgressive literature, literature that deals with social problems, satire, etc.) This course covers multiple literary genres, at least two historical periods, diverse authors, and explores various cultural contexts; this course is designed for students of all majors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

**Charger Foundations**

Area II: Literature

**EH244 - HEROES &/OR MONSTERS****Long Course Title**

HEROES AND/OR MONSTERS

**Course Description**

Reading, discussing, analyzing, and writing about heroes and/or monsters (might include heroes, antiheroes, monster literature, etc.) This course covers multiple literary genres, at least two historical periods, diverse authors, and explores various cultural contexts; this course is designed for students of all majors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

**Charger Foundations**

Area II: Literature

**EH245 - LOVE &/OR ROMANCE****Long Course Title**

LOVE AND/OR ROMANCE

**Course Description**

Reading, discussing, analyzing, and writing about the topic of love and/or romance (might include love and its challenges, platonic love, the absence of love, etc.) This course covers multiple literary genres, at least two historical periods, diverse authors, and explores various cultural contexts; this course is designed for students of all majors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

**Charger Foundations**

Area II: Literature

**EH246 - SPECULATIVE REALITIES****Long Course Title**

SPECULATIVE REALITIES

**Course Description**

Reading, discussing, analyzing, and writing about speculative realities (might include utopia/dystopia, science fiction, alternate realities, etc.) This course covers multiple literary genres, at least two historical periods, diverse authors, and explores various cultural contexts; this course is designed for students of all majors.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

**Charger Foundations**

Area II: Literature



**EH260 - INTRO TO WRITING MAJOR****Long Course Title**

INTRODUCTION TO THE WRITING MAJOR

**Course Description**

An introduction to the Writing B.A., this course will overview the field of Writing Studies, its methods of inquiry, and the interdisciplinary nature of its rhetoric, composition and language/literacy influences.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

**EH300 - STRATEGIES FOR BUSINESS WRIT'G****Long Course Title**

STRATEGIES FOR BUSINESS WRITING

**Course Description**

Practical business writing with emphasis on rhetoric, organization, and research. Open to all students in the College of Business or by permission of the Department of English. Qualifies as elective in the English major. Junior standing required.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Earn a minimum grade of C- in at least 1 of the following:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

**EH301 - TECHNICAL WRITING****Long Course Title**

TECHNICAL WRITING

**Course Description**

Practical writing, especially technical or scientific reports and proposals, with emphasis on organization, research, and presentation. Qualifies as elective in English major.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Earn a minimum grade of C in at least 1 of the following:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

**EH302 - TECHNICAL EDITING****Long Course Title**

TECHNICAL EDITING

**Course Description**

Clarifying, expanding, reducing, and rewriting technical reports and other documents created by others. Emphasis on elements of style and usage, revision, proofreading, and application of rhetorical techniques to the work of engineers, scientists, and technicians. Includes lab emphasizing software skills useful for technical editing. Qualifies as elective in English major. Does not count toward English minor without special approval.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH301 - TECHNICAL WRITING (3)

## **EH305 - INTRO TO LITERARY STUDIES**

### **Long Course Title**

INTRODUCTION TO LITERARY STUDIES

### **Course Description**

Designed as an introduction to the study of literature, this course will address the history of textual interpretation, the practice of literary analysis, the theoretical debates central to literary studies, and the basic research and writing skills required for literary criticism.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

## **EH310 - INTRO TO FICTION WRITING**

### **Long Course Title**

INTRODUCTION TO FICTION WRITING

### **Course Description**

Students will learn the fundamentals of fiction writing, including plot, character development, and setting. Students will participate in peer workshops and create a portfolio of their revised work

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH211 - INTRO CREATIVE WRITING (3)

## **EH320 - PRACTICUM IN WRITING**

### **Course Description**

Writing and editing under the supervision of professionals.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - EH301 - TECHNICAL WRITING (3)
    - EH302 - TECHNICAL EDITING (3)
  - Advisor or Instructor Permission Required

### **Equivalent Course(s)**

CM320 - PRACTICUM IN WRITING

## **EH335 - SURVEY BRITISH LITERATURE**

### **Long Course Title**

SURVEY OF BRITISH LITERATURE

### **Course Description**

Writers, genres, and periods from Beowulf through the present.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

## **EH336 - SURVEY AMERICAN LITERATURE**

### **Long Course Title**

SURVEY OF AMERICAN LITERATURE

### **Course Description**

Writers, genres, and periods from the Age of Discovery through the present.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH302 - TECHNICAL EDITING (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

## **EH340 - ACADEMIC WRITING**

### **Course Description**

Advanced academic writing designed to prepare students for the writing, research, and publishing requirements of their field of study.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Sophomore or higher
  - Earn a minimum grade of C- in at least 1 of the following:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

## **EH400 - COMPOSITION STUDIES FOR TCHERS**

### **Long Course Title**

COMPOSITION STUDIES FOR TEACHERS

### **Course Description**

Introduction to effective strategies for the teaching of writing. Students will report on their own writing pedagogy as a result of reading and analyzing a range of writing research related to strategies of assigning, responding and assessing writing.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

### **Cross-Listed Course**

EH500 - COMPOSITION STUDIES TCHRS

## **EH401 - THEORY & PRACTICE IN TECH COMM**

### **Long Course Title**

THEORY & PRACTICE IN TECHNICAL COMMUNICATION

### **Course Description**

Explores the relationships between common practices in technical communication and the theories that legitimize those practices. Introduces students to research and theories about fundamental issues in technical communication.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH301 - TECHNICAL WRITING (3)

### **Cross-Listed Course**

EH501 - THRY & PRACTICE TECHNICAL COMM

## **EH403 - LITERARY CRITICISM & THEORY**

### **Course Description**

Major texts and approaches from Plato to the present.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

### **Cross-Listed Course**

EH503 - LITERARY CRITICISM AND THEORY

## **EH408 - HISTORY OF ENGLISH LANGUAGE**

### **Long Course Title**

HISTORY OF THE ENGLISH LANGUAGE

### **Course Description**

History of the emergence and development of English from the pre-Anglo-Saxon period to the present. Emphasis on cultural contexts.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

### **Cross-Listed Course**

EH508 - HISTORY OF THE ENGLISH LANG

## **EH409 - PROPOSAL WRITING**

### **Course Description**

This course teaches effective strategies for writing successful proposals in business, academic, research, and non-profit contexts. Senior standing required.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Senior

### **Cross-Listed Course**

EH509 - PROPOSAL WRITING

## **EH410 - FICTION WRITING**

### **Long Course Title**

FICTION WRITING

### **Course Description**

Practice in writing fiction from conception to revision. Students will read and write contemporary literary fiction. Student work will be commented on and critiqued in regular class workshops. The class culminates in a revision portfolio.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH211 - INTRO CREATIVE WRITING (3)

### **Cross-Listed Course**

EH510 - ADV FICTION WRITING

## **EH411 - POETRY WRITING**

### **Course Description**

Practice in writing poetry from conception to revision. Students will read and write contemporary poetry. Student work will be commented on and critiqued in regular class workshops. The class culminates in a revision portfolio.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH211 - INTRO CREATIVE WRITING (3)

### **Cross-Listed Course**

EH511 - POETRY WRITING



**EH412 - SPEC STUDIES CREATIVE WRITING****Long Course Title**

SPECIAL STUDIES IN CREATIVE WRITING

**Course Description**

Topics in creative writing, professional writing, or other advanced writing announced in advance.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH211 - INTRO CREATIVE WRITING (3)

**Cross-Listed Course**

EH512 - SP TOPICS IN CREATIVE WRITING

**EH413 - CHILDREN'S & ADOLESCENT LIT****Long Course Title**

CHILDREN'S & ADOLESCENT LITERATURE

**Course Description**

Course content will include the study of various genres of children's and adolescent literature and their relationship to beginning reading, enhancement of reading comprehension, and intervention instruction in the various content areas.

**Credits**

3

**Prerequisites**

- Admitted to: BA ENGLISH

**Equivalent Course(s)**

ED413 - CHILDREN'S & ADOLESCENT LIT

**EH414 - CREATIVE NONFICTION WRITING****Long Course Title**

CREATIVE NONFICTION WRITING

**Course Description**

This composition class introduces students to the genre of creative non-fiction via revising, peer responding, prose modeling, and conferencing; and developing expertise in rhetorical writing concepts.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)

**Cross-Listed Course**

EH514 - CREATIVE NONFICTION WRITING

**EH415 - ANGLOPHONE/POSTCOLONIAL LIT****Long Course Title**

ANGLOPHONE AND/OR POSTCOLONIAL LITERATURE

**Course Description**

An introduction to major concepts, figures, and works with emphasis upon historical and cultural context. Specific focus will vary.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH515 - ANGLOPHONE/POSTCOLONIAL LIT

**EH418 - REP TEXTS-WOMEN WRITERS****Long Course Title**

REPRESENTATIVE TEXTS BY WOMEN AUTHORS

**Course Description**

Focus on women's contribution to the literary tradition.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH518 - REP TEXTS-WOMEN WRITERS

**EH422 - STUDIES IN THE NOVEL****Long Course Title**

STUDIES IN THE NOVEL

**Course Description**

Focuses on varying topics in the novel with special attention to form. Texts may be drawn from diverse national and cultural origins.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH522 - STUDIES IN THE NOVEL

**EH423 - CONTEMPORARY BRITISH LITERATUR****Long Course Title**

CONTEMPORARY BRITISH LITERATURE

**Course Description**

Major works after 1945 with emphasis on historical and cultural contexts. Specific focus will vary.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH523 - CONTEMPORARY BRITISH LIT

## **EH424 - POETRY AND POETICS**

### **Course Description**

An attempt to answer (at least provisionally) the questions "What is a poem?" and "What is poetry?". How to read a poem closely and carefully, with attention to theory, history of genres, and especially the technical aspects of poetry.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

### **Cross-Listed Course**

EH524 - POETRY AND POETICS

## **EH429 - STUDIES IN AMERICAN CINEMA**

### **Long Course Title**

STUDIES IN AMERICAN CINEMA

### **Course Description**

Focuses on select topics in American cinema with an emphasis on film history, technique, aesthetics, and cultural context.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**EH430 - THE AMERICAN NOVEL****Long Course Title**

THE AMERICAN NOVEL

**Course Description**

The American novel. In alternate years the course may focus on 19th or 20th century American novels.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH530 - THE AMERICAN NOVEL

**EH433 - WILLIAM FAULKNER****Course Description**

Critical study of the major novels.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH533 - WILLIAM FAULKNER

**EH434 - SCIENCE FICTION****Long Course Title**

SCIENCE FICTION

**Course Description**

Selected short stories and novels, exploring the thematic and narrative concerns of both classic and contemporary science fiction. In alternate years, the course may focus on a specific problem or concern in science fiction.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH534 - SCIENCE FICTION

**EH435 - SPECIAL STUDIES AMERICAN LIT****Long Course Title**

SPECIAL STUDIES AMERICAN LITERATURE

**Course Description**

Topics announced in advance.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**EH438 - AFRICAN AMERICAN LITERATURE****Long Course Title**

AFRICAN AMERICAN LITERATURE

**Course Description**

Themes, concepts and imagery in the Black American literary tradition.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH538 - AFRICAN AMERICAN LITERATURE

**EH440 - SPECIAL TOPICS ENGLISH STUDIES****Long Course Title**

SPECIAL TOPICS IN ENGLISH STUDIES

**Course Description**

Topics announced in advance.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH540 - SP TOPICS IN ENGLISH STUDIES

## **EH442 - USABILITY STUDIES**

### **Course Description**

Introduces students to theory and practice of usability, which involves designing useful, easy-to-use websites, software, and products. The course involves group projects conducting real-world usability testing. Junior standing required.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Junior or higher

### **Cross-Listed Course**

EH542 - USABILITY STUDIES

## **EH448 - THE BIBLE AS LITERATURE**

### **Course Description**

An introduction to the major literary forms of the Bible. Material will be approached analytically, involving both socio-historical and literary-critical perspectives.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

### **Cross-Listed Course**

EH548 - THE BIBLE AS LITERATURE



**EH450 - CHAUCER****Long Course Title**

CHAUCER

**Course Description**

A study of Geoffrey Chaucer's Middle English works including the early drama visions, Troilus and Criseyde, and the Canterbury Tales.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH550 - CHAUCER

**EH451 - ARTHURIAN ROMANCE****Course Description**

A study of Arthurian Literature focused on medieval Welsh, Scottish, English, and French poetry and prose, as well as early-modern and modern adaptations of Arthurian stories in poetry, prose, drama, and film.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH551 - ARTHURIAN ROMANCE

**EH452 - USER-CENTERED DESIGN****Long Course Title**

USER-CENTERED DESIGN

**Course Description**

Introduces students to user-centered design principles that inform the practice of user experience design. Students will use visual thinking as they complete contextual inquiries and mapping exercises.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Equivalent Course(s)**

CM452 - USER-CENTERED DESIGN

**Cross-Listed Course**

EH552 - USER-CENTERED DESIGN

**EH454 - NEW MEDIA WRITING & RHETORIC****Course Description**

This course teaches students to apply rhetorical principles across a variety of media and includes an examination of communication strategies used widely in academic and industry settings. The course focuses on new media through an exploration of digital technologies and the way digital culture and new media have dramatically impacted reading, writing, and research practices.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Earn a minimum grade of C- in all of the following:
    - EH101 - COLLEGE WRITING I (3)
    - EH102 - COLLEGE WRITING II (3)

**Cross-Listed Course**

EH554 - NEW MEDIA WRITING & RHETORIC

## **EH460 - SIXTEENTH-CENTURY LITERATURE**

### **Long Course Title**

SIXTEENTH-CENTURY LITERATURE

### **Course Description**

Selected works from the reigns of Henry VIII and Elizabeth I. Close readings of texts in their historical, intellectual, and social contexts.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

### **Cross-Listed Course**

EH560 - SIXTEENTH-CENTURY LITERATURE

## **EH461 - SHAKESPEARE I**

### **Course Description**

Introduction to Shakespeare's canon, selected from tragedies, comedies, histories, romances. The course may include a variety of critical approaches (historical, political, feminist, queer, performative, linguistic, and cultural).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**EH462 - SHAKESPEARE II****Long Course Title**

SHAKESPEARE II

**Course Description**

Specialized study of Shakespeare's works, with particular attention to a given genre, time period, theme, cultural context, and/or critical/theoretical approach.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**EH463 - CAPSTONE IN WRITING****Course Description**

A senior capstone course for the Writing BA for which students will complete a portfolio of their writing. Portfolios will include reflection on and revision to selected samples of course-participants' writing and a scholarly project completed for the capstone course.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - EH260 - INTRO TO WRITING MAJOR (2)

**EH465 - DRAMATIC LITERATURE****Long Course Title**

DRAMATIC LITERATURE

**Course Description**

Studies in Drama and interpretive strategies for reading plays. May be organized nationally, by genre, or by theme/topic.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH565 - DRAMATIC LITERATURE

**EH470 - MILTON****Long Course Title**

MILTON

**Course Description**

A study of the development of Milton's thought and art as it appears in his early poems, selected prose, and later poetry, with particular attention given to Paradise Lost.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH570 - MILTON

**EH473 - EARLY MODERN LITERATURE****Long Course Title**

EARLY MODERN LITERATURE

**Course Description**

This course will examine a particular theme, issue and/or debate within the early modern period, roughly 1500-1700: constructions of subjectivity and community, the exploration of the New World, the rediscovery of the natural world through scientific investigation. The course will likely introduce modern scholarship.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)

**Cross-Listed Course**

EH573 - EARLY MODERN LITERATURE

**EH475 - RHETORIC AND WRITING****Long Course Title**

RHETORIC AND WRITING

**Course Description**

Provides a focused look at specific issues of rhetoric in society, with an emphasis on academic analysis and rhetorical strategy.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Cross-Listed Course**

EH575 - RHETORIC AND WRITING

**EH498 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Individual investigation into significant issues in linguistics, literature, technical communication, or composition studies under direct supervision of instructor.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Instructor and Department Chair Permission Required

**EH500 - COMPOSITION STUDIES TCHRS****Long Course Title**

COMPOSITION STUDIES FOR TEACHERS

**Course Description**

Introduction to effective strategies for the teaching of writing. Students will report on their own writing pedagogy as a result of reading and analyzing a range of writing research related to strategies of assigning, responding, and assessing writing.

**Credits**

3

**Cross-Listed Course**

EH400 - COMPOSITION STUDIES FOR TCHERS

**EH501 - THRY & PRACTICE TECHNICAL COMM****Long Course Title**

THEORY AND PRACTICE IN TECHNICAL COMMUNICATION

**Course Description**

Explores the relationships between common practices in technical communication and the theories that legitimize those practices. Introduction to research and theories about fundamental issues in technical communication

**Credits**

3

**Cross-Listed Course**

EH401 - THEORY & PRACTICE IN TECH COMM

**EH503 - LITERARY CRITICISM AND THEORY****Long Course Title**

LITERARY CRITICISM AND THEORY

**Course Description**

Major texts and approaches from Plato to the present.

**Credits**

3

**Cross-Listed Course**

EH403 - LITERARY CRITICISM & THEORY

**EH504 - LITERARY RESEARCH****Course Description**

Introduction to the method and practice of advanced literary studies with emphasis on the development of literary critical research skills, the building of a critical lexicon, and the application of theory and criticism.

**Credits**

3

**EH508 - HISTORY OF THE ENGLISH LANG****Long Course Title**

HISTORY OF THE ENGLISH LANGUAGE

**Course Description**

History of the emergence and development of English from the pre-Anglo-Saxon period to the present. Emphasis on cultural contexts.

**Credits**

3

**Cross-Listed Course**

EH408 - HISTORY OF ENGLISH LANGUAGE

**EH509 - PROPOSAL WRITING****Long Course Title**

PROPOSAL WRITING

**Course Description**

This course teaches effective strategies for writing successful proposals in business, academic, research, and non-profit contexts.

**Credits**

3

**Cross-Listed Course**

EH409 - PROPOSAL WRITING



**EH510 - ADV FICTION WRITING****Long Course Title**

FICTION WRITING

**Course Description**

Practice in writing fiction from conception to revision. Students will read and write contemporary literary fiction. Student work will be commented on and critiqued in regular class workshops. The class culminates in a revision portfolio.

**Credits**

3

**Cross-Listed Course**

EH410 - FICTION WRITING

**EH511 - POETRY WRITING****Long Course Title**

POETRY WRITING

**Course Description**

Practice in writing poetry from conception to revision. Students will read and write contemporary poetry. Student work will be commented on and critiqued in regular class workshops. The class culminates in a revision portfolio.

**Credits**

3

**Cross-Listed Course**

EH411 - POETRY WRITING

**EH512 - SP TOPICS IN CREATIVE WRITING****Long Course Title**

SPECIAL TOPICS IN CREATIVE WRITING

**Course Description**

Topics in creative writing, professional writing, or other advanced writing announced in advance.

**Credits**

3

**Cross-Listed Course**

EH412 - SPEC STUDIES CREATIVE WRITING

**EH514 - CREATIVE NONFICTION WRITING****Course Description**

This composition class introduces students to the genre of creative non-fiction through exploring various approaches to the non-fiction writing; developing expertise in writing strategies such as revising, peer responding, prose modeling, and conferencing; and developing expertise in rhetorical writing concepts.

**Credits**

3

**Cross-Listed Course**

EH414 - CREATIVE NONFICTION WRITING

**EH515 - ANGLOPHONE/POSTCOLONIAL LIT****Long Course Title**

ANGLOPHONE AND/OR POSTCOLONIAL LITERATURE

**Course Description**

An introduction to major concepts, figures, and works with emphasis upon historical and cultural context. Specific focus will vary.

**Credits**

3

**Cross-Listed Course**

EH415 - ANGLOPHONE/POSTCOLONIAL LIT

**EH518 - REP TEXTS-WOMEN WRITERS****Long Course Title**

REPRESENTATIVE TEXTS BY WOMEN AUTHORS

**Course Description**

Focus on women's contribution to the literary tradition.

**Credits**

3

**Cross-Listed Course**

EH418 - REP TEXTS-WOMEN WRITERS

**EH522 - STUDIES IN THE NOVEL****Course Description**

Focuses on varying topics in the novel with special attention to form. Texts may be drawn from diverse national and cultural origins.

**Credits**

3

**Cross-Listed Course**

EH422 - STUDIES IN THE NOVEL

**EH523 - CONTEMPORARY BRITISH LIT****Long Course Title**

CONTEMPORARY BRITISH LITERATURE

**Course Description**

Major works after 1945 with emphasis on historical and cultural contexts. Specific focus will vary.

**Credits**

3

**Cross-Listed Course**

EH423 - CONTEMPORARY BRITISH LITERATUR

**EH524 - POETRY AND POETICS****Course Description**

An attempt to answer (at least provisionally) the questions "What is a poem?" and "What is poetry?". How to read a poem closely and carefully, with attention to theory, history of genres, and especially the technical aspects of poetry.

**Credits**

3

**Cross-Listed Course**

EH424 - POETRY AND POETICS

**EH530 - THE AMERICAN NOVEL****Course Description**

Topics announced in advance.

**Credits**

3

**Cross-Listed Course**

EH430 - THE AMERICAN NOVEL

**EH533 - WILLIAM FAULKNER****Course Description**

Critical study of the major novels

**Credits**

3

**Cross-Listed Course**

EH433 - WILLIAM FAULKNER

**EH534 - SCIENCE FICTION****Course Description**

Selected short stories and novels, exploring the thematic and narrative concerns of both classic and contemporary science fiction. In alternate years, the course may focus on a specific problem or concern in science fiction.

**Credits**

3

**Cross-Listed Course**

EH434 - SCIENCE FICTION

**EH538 - AFRICAN AMERICAN LITERATURE****Long Course Title**

AFRICAN AMERICAN LITERATURE

**Course Description**

Themes, concepts and imagery in the Black American literary tradition.

**Credits**

3

**Cross-Listed Course**

EH438 - AFRICAN AMERICAN LITERATURE

**EH540 - SP TOPICS IN ENGLISH STUDIES****Long Course Title**

SPECIAL TOPICS IN ENGLISH STUDIES

**Course Description**

Topics announced in advance.

**Credits**

1 - 3

**Cross-Listed Course**

EH440 - SPECIAL TOPICS ENGLISH STUDIES

**EH542 - USABILITY STUDIES****Long Course Title**

USABILITY STUDIES

**Course Description**

Introduces students to the theory and practices of usability, which involves designing useful, easy-to-use websites, software, and products. The course involves group projects conducting real-world usability testing.

**Credits**

3

**Cross-Listed Course**

EH442 - USABILITY STUDIES

**EH548 - THE BIBLE AS LITERATURE****Long Course Title**

THE BIBLE AS LITERATURE

**Course Description**

An introduction to the major literary forms of the Bible. Material will be approached analytically, involving both socio-historical and literary-critical perspectives.

**Credits**

3

**Cross-Listed Course**

EH448 - THE BIBLE AS LITERATURE

**EH550 - CHAUCER****Course Description**

A study of Geoffrey Chaucer's Middle English works including the early dream visions, Troilus and Criseyde, and the Canterbury Tales.

**Credits**

3

**Cross-Listed Course**

EH450 - CHAUCER

**EH551 - ARTHURIAN ROMANCE****Long Course Title**

ARTHURIAN ROMANCE

**Course Description**

A study of Arthurian Literature focused on medieval Welsh, Scottish, English, and French poetry and prose, as well as later early modern and modern adaptations of Arthurian stories in poetry, prose, drama, and film.

**Credits**

3

**Cross-Listed Course**

EH451 - ARTHURIAN ROMANCE

**EH552 - USER-CENTERED DESIGN****Long Course Title**

USER-CENTERED DESIGN

**Course Description**

Introduces students to user-centered design principles that inform the practice of user experience design. Students will use visual thinking as they complete contextual inquiries and mapping exercises.

**Credits**

3

**Equivalent Course(s)**

CM552 - USER-CENTERED DESIGN

**Cross-Listed Course**

EH452 - USER-CENTERED DESIGN

**EH553 - COMMUNICATING WITH USERS****Course Description**

This course teaches students how to effectively research user needs and produce technical communication documents to meet those needs.

**Credits**

3

**EH554 - NEW MEDIA WRITING & RHETORIC****Long Course Title**

NEW MEDIA WRITING & RHETORIC

**Course Description**

This course teaches students to consider and implement rhetorical principles across a variety of media and includes an examination of communication strategies used widely in academic and industry settings. The course focuses on new media through an exploration of digital technologies and the way digital culture and new media have dramatically impacted reading, writing and research practices.

**Credits**

3

**Cross-Listed Course**

EH454 - NEW MEDIA WRITING & RHETORIC

**EH560 - SIXTEENTH-CENTURY LITERATURE****Long Course Title**

SIXTEENTH-CENTURY LITERATURE

**Course Description**

Selected works from the reigns of Henry VIII and Elizabeth I. Close reading of texts in their historical, intellectual, and social contexts.

**Credits**

3

**Cross-Listed Course**

EH460 - SIXTEENTH-CENTURY LITERATURE

**EH565 - DRAMATIC LITERATURE****Course Description**

Studies in Drama and interpretive strategies for reading plays. May be organized nationally, by genre, or by theme/topic.

**Credits**

3

**Cross-Listed Course**

EH465 - DRAMATIC LITERATURE

**EH570 - MILTON****Long Course Title**

MILTON

**Course Description**

A study of the development of Miltons thought and art as it appears in his early poems, selected prose, and later poetry, with particular attention given to Paradise Lost.

**Credits**

3

**Cross-Listed Course**

EH470 - MILTON

**EH571 - RENAISSANCE DRAMA****Long Course Title**

RENAISSANCE DRAMA

**Course Description**

Non-Shakespearean drama of the sixteenth and early-seventeenth centuries in social, critical, and performative contexts. Specific focus will vary from term to term.

**Credits**

3

**EH573 - EARLY MODERN LITERATURE****Long Course Title**

EARLY MODERN LITERATURE

**Course Description**

This course will examine a particular theme, issue, and/or debate within the early modern period, roughly 1500-1700. The historical and geographical scope of the course will vary depending on the term, though the course will emphasize British literature. Within this literature, constructions of subjectivity and community vary greatly due to the influence of the European Renaissance, the Protestant Reformation, the exploration of the New World, as well as the rediscovery of the natural world through scientific investigation. While the course will introduce the complexities of early modern literary constructions of identity, the course will also illumine the ways in which these habits of thought were increasingly contested, sometimes to the point of violence. The course will likely include period-specific as well as modern scholarship.

**Credits**

3

**Cross-Listed Course**

EH473 - EARLY MODERN LITERATURE

**EH575 - RHETORIC AND WRITING****Long Course Title**

RHETORIC AND WRITING

**Course Description**

Provides a focused look at specific issues of rhetoric in society. Students develop a historical perspective of rhetoric through academic analysis and research that will inform rhetorical strategies for contemporary contexts.

**Credits**

3

**Cross-Listed Course**

EH475 - RHETORIC AND WRITING

**EH585 - THE ENLIGHTENMENT****Long Course Title**

THE ENLIGHTENMENT

**Course Description**

The European Enlightenment was an intellectual and cultural movement in the seventeenth and eighteenth centuries that emphasized the importance of reasoned, open-eyed investigations into nature and human society. Stimulated by the Scientific Revolution, Enlightenment philosophes prized skepticism and decried superstition and unquestioned faith. They are often credited with providing a theoretical basis for the American and French Revolutions. Scholars have also counted among the Enlightenment's important legacies the scientific method, the valuation of universal human rights, and the emergence of such disciplines as economics and anthropology. Authors discussed in the course may include: Bacon, Behn, Hume, Swift, Voltaire, Montagu, Franklin, Jefferson, Equiano, and Wollstonecraft.

**Credits**

3

**Cross-Listed Course**

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**EH601 - ACTION RESCH WRITING STUDIES****Long Course Title**

ACTION RESEARCH IN WRITING STUDIES

**Course Description**

Analysis of research on writing in the workplace, the community, and educational settings.

**Credits**

3

**EH602 - PRACTICUM/TECHNICAL COMM****Long Course Title**

PRACTICUM IN TECHNICAL COMMUNICATION

**Course Description**

Designed to give technical communication graduate students on-the-job experience in industry or government, either through an internship or a major research project connected with an industry problem.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EH501 - THRY & PRACTICE TECHNICAL COMM (3)

**EH603 - EDITING FOR PUBLICATION****Long Course Title**

EDITING FOR PUBLICATION

**Course Description**

A comprehensive survey of best practices for editing documents for clarity, correctness, accuracy, style, design, and usability. Course involves working with writers to edit work for publication.

**Credits**

3

**EH610 - FICTION WRITING SEMINAR****Course Description**

This course examines the power of storytelling and importance of narrative in all facets of our lives. From great works of literature to ad campaigns, stories have the power to persuade, unify, and sell. In this course we will read, write, and engage with various kinds of storytelling from the printed word to the digital marketplace. As this is a graduate-level course, students will also engage and work on texts used to accompany larger works in progress, such as query letters and synopses for novels, and cover letters.

**Credits**

3

**EH615 - CRITICAL THEORY****Course Description**

Intensive study of a specific author or topic in literary or critical theory. Focus will vary.

**Credits**

3

**EH618 - STUDIES/WOMEN & LITERATURE****Long Course Title**

STUDIES IN WOMEN & LITERATURE

**Course Description**

Selected authors, genres, and issues.

**Credits**

3

**EH629 - TWENTIETH-CENTURY LITERATURE****Course Description**

Selected poetry and prose with an emphasis on the Anglo-American Modernist tradition.

**Credits**

3

**EH630 - AMERICAN LITERATURE TO 1865****Long Course Title**

AMERICAN LITERATURE TO 1865

**Course Description**

Major movements from Colonial times to 1865; selected major figures or special problems.

**Credits**

3

**EH631 - AMERICAN LITERATURE SINCE 1865****Long Course Title**

AMERICAN LITERATURE SINCE 1865

**Course Description**

Major movements since 1865; selected major figures or special problems.

**Credits**

3

**EH639 - ETHNIC AMERICAN LITERATURE****Long Course Title**

ETHNIC AMERICAN LITERATURE

**Course Description**

Selected authors, concepts, histories, and cultures.

**Credits**

3

**EH649 - SPECIAL TOPICS****Course Description**

Study of significant issues in literature, technical communication, or composition studies, announced in advance.

**Credits**

1 - 3

**EH655 - MEDIEVAL LITERATURE****Long Course Title**

MEDIEVAL LITERATURE

**Course Description**

Topics in Medieval European and Eastern Literature.

**Credits**

3

**EH660 - SHAKESPEARE****Long Course Title**

SHAKESPEARE

**Course Description**

Selected Shakespearean plays, with special attention to the major criticism, problems of interpretation, and current issues in Shakespearean study.

**Credits**

3

**EH662 - INFORMATION ARCHITECTURE****Long Course Title**

INFORMATION ARCHITECTURE

**Course Description**

This class reviews research and principles that help students understand how communities label, organize, retrieve, and ultimately use information.

**Credits**

3

**EH665 - RENAISSANCE LITERATURE****Course Description**

An in depth study of a major theme, debate or question in 16th and early 17th century literature. Includes Renaissance criticism and modern scholarship.

**Credits**

3

**EH670 - STUDIES SEVENTEENTH CENTURY LT****Long Course Title**

STUDIES IN SEVENTEENTH CENTURY LITERATURE

**Course Description**

This course investigates one of the most volatile periods in Britain's history through a variety of literary and critical lenses, all geared toward a particular theme, issue, or debate. In this period, received bodies of knowledge and accompanying forms of authority - philosophical, religious, political and scientific - were increasingly called into question.

**Credits**

3

**EH680 - 18TH CENTURY STUDIES****Long Course Title**

18TH CENTURY STUDIES

**Course Description**

Extensive and intensive study of various early modern texts, with attention to interdisciplinary contexts.

**Credits**

3

**EH695 - NINETEENTH-CENTURY LITERATURE****Course Description**

This class will investigate Anglophone cultural expression and literary critical traditions associated with long nineteenth century (1789-1919). Specific thematic concern or period of focus is left to the discretion of the instructor.

**Credits**

3

**EH698 - INDEPENDENT STUDY****Course Description**

Individual investigation into significant issues in linguistics, literature, technical communication, or composition studies under direct supervision of instructor.

**Credits**

3

**Prerequisites**

- Instructor and Department Chair Permission Required

## **EH699 - MASTER'S THESIS**

### **Course Description**

EH 699 is required each semester during which a student is working and receiving direction on a master's thesis. No more than 6 hours credit may be applied toward the degree. A third semester of this class may be taken as a 0-credit class following the completion of taking EH 699 twice, if the student has completed their writing of a thesis but needs to complete graduate school requirements, including but not limited to revisions, reformatting, and scheduling an oral defense. The 0-credit option can only be taken once.

### **Credits**

0 - 6

### **Prerequisites**

- Instructor Permission Required

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## **English Second Language**

### **ESL400 - POLICY & PRAC IN EDUC LINGUIST**

#### **Long Course Title**

POLICY AND PRACTICE IN EDUCATIONAL LINGUISTICS

#### **Course Description**

In this course, we will investigate the sociocultural and political contexts within which linguistically diverse students encounter language across the U.S. education system. We will interrogate assumptions about language learning and teaching. Key topics include promising practices in supporting language and identity, such as translanguaging, multimodality, and multilingualism in educational and community settings.

#### **Credits**

3

#### **Cross-Listed Course**

ESL500 - POLICY & PRACTICE IN EDUC LING

### **ESL410 - INTRO TO LANGUAGE SYSTEMS**

#### **Long Course Title**

INTRODUCTION TO LANGUAGE SYSTEMS

#### **Course Description**

In this course, we study language systems in context. Phonetics, phonology, morphology, syntax, and semantics are the units of analysis as we consider variables that impact development and usage at individual and group levels. Comprehension and production of meaning across content domains are key elements of course assignments.

#### **Credits**

3

#### **Cross-Listed Course**

ESL510 - INTRO TO LANGUAGE SYSTEMS

**ESL420 - INSTR & ACADMC LANG CNTNT DOMN****Long Course Title**

INSTRUCTIONAL AND ACADEMIC LANGUAGE ACROSS CONTENT DOMAINS

**Course Description**

In this course, we investigate language usage through analysis of key structures, including the word, group, phrase, sentence and extended discourse. Following the systemic-functional framework, we will consider the design of instructional and academic language from a social semiotic perspective, highlighting the complex of options available for meaning making across multiple languages.

**Credits**

3

**Cross-Listed Course**

ESL520 - INSTR & ACADEMIC LANG CONT DOM

**ESL430 - DESIGN INSTRUCT/ACADEMIC LANG****Long Course Title**

DESIGNING INSTRUCTIONAL AND ACADEMIC LANGUAGE

**Course Description**

This course introduces students to the components of language systems in the discourses of ELA, Math, Social Studies, Science, etc. Through the analysis of samples of the language of classroom settings, students will be prepared to differentiate instruction to meet the needs of diverse learners across academic settings.

**Credits**

3

**Charger Foundations**

n/a

**ESL440 - INSTRUCT/EVAL LANG USAGE****Long Course Title**

INSTRUCTIONAL AND EVALUATION OF LANGUAGE USAGE

**Course Description**

This course provides the foundation for effective instruction of linguistically diverse students. We critique the theoretical underpinnings of historical and contemporary ESOL education as well as the selection of instructional materials, course design, and lesson plans. Assignments include the design of pedagogically sound classroom instruction and lesson plans, as well as application of responsive, evidence-based evaluation methods.

**Credits**

3

**ESL500 - POLICY & PRACTICE IN EDUC LING****Long Course Title**

POLICY AND PRACTICE IN EDUCATIONAL LINGUISTICS

**Course Description**

In this course, we investigate the sociocultural and political contexts within which linguistically diverse students encounter language across the U.S. education system. We will interrogate assumptions about language learning and teaching. Key topics include promising practices in supporting language and identity, such as translanguaging, multimodality, and multilingualism in educational and community settings.

**Credits**

3

**Cross-Listed Course**

ESL400 - POLICY & PRAC IN EDUC LINGUIST

**ESL510 - INTRO TO LANGUAGE SYSTEMS****Long Course Title**

INTRODUCTION TO LANGUAGE SYSTEMS

**Course Description**

In this course, we study language systems in context. Phonetics, phonology, morphology, syntax, and semantics are the units of analysis as we consider variables that impact development and usage at individual and group levels. Comprehension and production of meaning across content domains are key elements of course assignments.

**Credits**

3

**Cross-Listed Course**

ESL410 - INTRO TO LANGUAGE SYSTEMS

**ESL520 - INSTR & ACADEMIC LANG CONT DOM****Long Course Title**

INSTRUCTIONAL AND ACADEMIC LANGUAGE ACROSS CONTENT DOMAINS

**Course Description**

In this course, we investigate language usage through analysis of key structures, including the word, group, phrase, sentence and extended discourse. Following the system-functional framework, we will consider the design of instructional and academic language from a social semiotic perspective, highlighting the complex of options available for meaning making across multiple languages.

**Credits**

3

**Cross-Listed Course**

ESL420 - INSTR & ACADMC LANG CNTNT DOMN

**ESL640 - INSTRUCT/EVAL LANG USAGE****Long Course Title**

INSTRUCTIONAL AND EVALUATION OF LANGUAGE USAGE

**Course Description**

This course provides the foundation for effective instruction of linguistically diverse students. We critique the theoretical underpinnings of historical and contemporary ESOL education as well as the selection of instructional materials, course design, and lesson plans. Assignments include the design of pedagogically sound classroom instruction and lesson plans, as well as application of responsive, evidence-based evaluation methods.

**Credits**

3

**ESL650 - PRACTICUM, TESOL****Long Course Title**

PRACTICUM, TESOL

**Course Description**

This course review the foundations of responsive course, program, and curriculum design. Students engage in supervised instruction of English to linguistically diverse learners in target contexts.

**Credits**

3

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## EnglishLinguistics

**EHL409 - SPEC STUDIES: APPL LINGUISTICS****Long Course Title**

SPECIAL STUDIES: APPLICATIONS OF LINGUISTICS

**Course Description**

Special topics in linguistics. Focus and emphasis of topics announced in advance.

**Credits**

3

**Cross-Listed Course**

EHL509 - SP STUDIES IN APPL LINGUISTICS

**EHL509 - SP STUDIES IN APPL LINGUISTICS****Long Course Title**

SPECIAL STUDIES IN APPL LINGUISTICS

**Course Description**

Special topics in linguistics. Focus and emphasis of topics announced in advance.

**Credits**

3

**Cross-Listed Course**

EHL409 - SPEC STUDIES: APPL LINGUISTICS



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## Film and Media Arts

### **FMA123 - INTRO TO FILM STUDIES**

#### **Long Course Title**

INTRODUCTION TO FILM STUDIES

#### **Course Description**

Students develop a critical understanding of how the 'language' of film uses image and sound to produce meaning and pleasure, and to elicit audience response in order to generate what constitutes meaning. Concentrating on film form and style, the course teaches students to engage cinema in relation to narrative, mise-en-scene, cinematography, editing, sound, and genre.

#### **Credits**

3

### **FMA210 - WRITING FOR VISUAL MEDIA**

#### **Long Course Title**

WRITING FOR VISUAL MEDIA

#### **Course Description**

This course offers an introduction to scriptwriting for a variety of media: commercials, PSAs, fiction films, documentaries, and the web. The art of "visual writing" is emphasized. Students produce scripts on their own while contributing to and critiquing the work of their fellow classmates. ed, communication medium.

#### **Credits**

3

#### **Prerequisites**

- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

#### **Equivalent Course(s)**

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**FMA260 - VIDEO PRODUCTION****Long Course Title**

VIDEO PRODUCTION

**Course Description**

This course provides students with an opportunity to experience the process of video production through creative projects designed to stimulate the visual artist, summon the storyteller and create the video editor.

**Credits**

3

**Equivalent Course(s)**

TH260 - VIDEO PRODUCTION

**FMA334 - HISTORY OF AMERICAN CINEMA****Long Course Title**

HISTORY OF AMERICAN CINEMA

**Course Description**

Investigates the American cinema as a cultural artifact by studying cultural and historical context of representations, audiences, aesthetics and industry practices in American cinema from its beginning (1895) to present.

**Credits**

3

**Equivalent Course(s)**

TH334 - HISTORY OF AMERICAN CINEMA

**FMA340 - SP TOPICS FILM & MEDIA ARTS****Long Course Title**

SPECIAL TOPICS IN FILM AND MEDIA ARTS

**Course Description**

Topics announced in advance. Representative topics include Cinematography, Editing, Broadcast and so forth. This can be taken twice for credit.

**Credits**

3

## **FMA360 - ADV VIDEO PRODUCTION**

### **Long Course Title**

ADVANCED VIDEO PRODUCTION

### **Course Description**

Advanced Video Production is an intensive video production course designed to integrate film theory and practice. Students will learn the technical and artistic necessities of the film and video medium. Through immersive lectures, workshops, projects, and exercises, students will gain valuable experience and know-how in this exciting, fast-paced, communication medium.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FMA260 - VIDEO PRODUCTION (3)

### **Equivalent Course(s)**

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## **FMA375 - DOCUMENTARY FILM PRODUCTION**

### **Course Description**

Through readings, screenings, discussion, and practice, students will become acquainted with various approaches to documentary film and video in theory and practice. Focus will be on the ethical, rhetorical, and creative choices that form conventions and modes documentary filmmakers have developed in their practice and critics have used to describe and analyze how documentaries communicate. Students will experiment with some of these choices by working on their own short documentary projects.

### **Credits**

3

## **FMA401 - INTERNSHIP IN VIDEO**

### **Course Description**

Students receive practical, production experience in the engagement of a creative project where they are able to apply principles, theories, and production skills learned from previous video courses and/or other course work.

### **Credits**

3

**FMA431 - VIDEO CAPSTONE****Long Course Title**

SENIOR CAPSTONE IN VIDEO

**Course Description**

senior Capstone in Video is required of all students in the Film and Media Arts minor. A final video project is submitted and approved by the FMA director and can include feature film, documentary, video marketing and video for social media to name a few. Project to represent the culmination of learning and skill garnered from the program.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FMA260 - VIDEO PRODUCTION (3)
  - FMA360 - ADV VIDEO PRODUCTION (3)

**FMA450 - HISTORY OF HORROR****Long Course Title**

HISTORY OF HORROR

**Course Description**

This course surveys the horror film from its themes, stories, and monsters. We cover a range of films and topics: the early silent era and its literary roots, German Expressionism and the classic 1930s horror films of Universal, and independent cult classics all leading up to the mainstream films of today.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Must have a class standing of Sophomore
  - Must have a class standing of Junior
  - Must have a class standing of Senior

**FMA460 - STUDIO BROADCAST PRODUCTION****Long Course Title**

STUDIO BROADCAST PRODUCTION

**Course Description**

This course provides students with an opportunity for learning pre-production, production and post-production of television and live event programs using field shooting and multi-camera production techniques of a TV studio. Class activities include operation of cameras, control panels, lights, and audio in directing and producing non-dramatic programs such as sports, journalism/news, demonstrations, video gaming, commercials, and interviews.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FMA260 - VIDEO PRODUCTION (3)

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# Finance

## **FIN100 - PERSONAL FINANCIAL PLANNING**

### **Long Course Title**

PERSONAL FINANCIAL PLANNING

### **Course Description**

An introduction to the study of personal money management. Topics include budgeting, home ownership, insurance, investing, and retirement planning. Cannot be used by finance majors as an elective in the major.

### **Credits**

3

### **Prerequisites**

- Not admitted to BSBA FINANCE

## **FIN230 - FINANCE ACADEMY I**

### **Course Description**

Designed to enhance the learning experience for students majoring in finance, economics, and accounting. Students get a "jump-start" on learning and applying basic finance knowledge and skills, including Excel spreadsheets. Also includes activities designed to develop "soft skills" such as professionalism, speaking, and working in teams/groups. Students begin to manage an actual investment portfolio.

### **Credits**

1

## **FIN301 - PRINCIPLES OF FINANCE**

### **Long Course Title**

PRINCIPLES OF FINANCE

### **Course Description**

A study of the basic principles of modern finance: financial statement analysis, time value of money, security valuation, risk and return, capital investment, cost of capital, and international finance.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - ECN143 - PRINC OF MICROECONOMICS (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)

## **FIN330 - FINANCE ACADEMY II**

### **Course Description**

A continuation of FIN 230. Students learn and apply the tools and knowledge to begin analyzing companies for investment, including TVM, ratio analysis, equity investment fundamentals, and more advanced Excel techniques. Emphasis is placed on individual stock analysis and students propose stocks for the Chan Fund.

### **Credits**

1

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN230 - FINANCE ACADEMY I (1)

## **FIN352 - MONEY & BANKING**

### **Course Description**

Organization, operation, and economic significance of monetary and banking systems. Fractional reserve banking systems, money creation, the Federal Reserve System, U.S. financial intermediaries, introduction to monetary theory and international finance.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - ECN143 - PRINC OF MICROECONOMICS (3)

### **Equivalent Course(s)**

ECN352 - MONEY AND BANKING

## **FIN370 - COMMERCIAL BANK MANAGEMENT**

### **Course Description**

A study of the financial management of commercial banks emphasizing both current events and principles of sound management. Topics range from measuring bank performance, asset and liability management, risk management, and international banking.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Junior or higher

## **FIN375 - FINANCIAL INSTITUTIONS**

### **Course Description**

Role and activities of financial intermediaries as they affect flow of funds and capital formation money markets in which these institutions operate.

### **Credits**

3

## **FIN400 - INVESTMENT PRACTICUM**

### **Course Description**

Students form the UAH Capital Management Group (CMG) and get hands-on experience managing real-money investment portfolios under the instruction and supervision of a finance faculty member. Emphases include stock analysis and investment portfolio construction.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN460 - INVESTMENTS (3)

### **Cross-Listed Course**

FIN500 - INVESTMENT PRACTICUM

## **FIN412 - FINANCIAL MODELING**

### **Long Course Title**

FINANCIAL MODELING

### **Course Description**

An introduction of current practices in financial modeling using Excel. Topics include basic concepts and analytical tools in both corporate finance and investments. This hands-on course provides students with skills to apply theories, concepts, and analytical tools in financial analysis and decision-making.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN301 - PRINCIPLES OF FINANCE (3)

## **FIN430 - FINANCE ACADEMY III**

### **Course Description**

A continuation of FIN 330. Emphasis is on the management of the Chan Fund. Students learn different aspects of the portfolio management process, and serve as the portfolio manager for the Chan Fund.

### **Credits**

1

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN330 - FINANCE ACADEMY II (1)

**FIN431 - ADVANCED CORPORATE FINANCE****Long Course Title**

ADVANCED CORPORATE FINANCE

**Course Description**

Advanced corporate finance theories and their applications. Topics include long- and short-term financial planning, project valuation, capital structure policy, dividend policy, mergers and acquisitions, and risk management.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN301 - PRINCIPLES OF FINANCE (3)

**Cross-Listed Course**

FIN531 - ADVANCED CORPORATE FINANCE

**FIN454 - INTERNATIONAL FINANCE****Long Course Title**

INTERNATIONAL FINANCE

**Course Description**

An introduction to international finance for tomorrow's global business leaders, with a focus on the financial management dimensions of leading a multinational enterprise.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN301 - PRINCIPLES OF FINANCE (3)

**Cross-Listed Course**

FIN554 - INTERNATIONAL FINANCE



## **FIN460 - INVESTMENTS**

### **Course Description**

A study of standard investment securities, as well as an overall view of the investment process. Securities covered include equities, fixed income, options, futures and mutual funds. Associated topics include financial markets, valuation models, and fundamental portfolio theory.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - FIN301 - PRINCIPLES OF FINANCE (3)
  - Must have a class standing of Junior or higher

### **Cross-Listed Course**

FIN560 - INVESTMENTS

## **FIN461 - PORTFOLIO MANAGEMENT**

### **Long Course Title**

PORTFOLIO MANAGEMENT

### **Course Description**

A continuation of FIN 460 with an emphasis on the application of investment portfolio management. An understanding of the functional areas of portfolio management is stressed, including investment policy, investment strategy, portfolio construction, performance evaluation, and portfolio protection.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - FIN301 - PRINCIPLES OF FINANCE (3)
  - FIN460 - INVESTMENTS (3)

### **Cross-Listed Course**

FIN561 - PORTFOLIO MANAGEMENT

## **FIN490 - SPECIAL PROJECTS**

### **Long Course Title**

SPECIAL PROJECTS

### **Course Description**

Independent study in an area of interest to the student in the field of finance. Approval of department chair is required.

### **Credits**

3

### **Prerequisites**

- Department Chair Permission Required

**FIN495 - INTERNSHIP IN FINANCE****Course Description**

Active involvement in a business enterprise, professional organization, or government agency that has particular interest and relevance to the student. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis. Subject to College's guidelines on internships.

**Credits**

1 - 3

**Prerequisites**

- Must have a class standing of Senior

**FIN500 - INVESTMENT PRACTICUM****Course Description**

Small number of students work closely with finance faculty in the UAH Capital Management group (CMG) to manage actual investment portfolios. Emphasis is placed on individual stock selection and management of the portfolio to meet objectives.

**Credits**

4

**Cross-Listed Course**

FIN400 - INVESTMENT PRACTICUM

**FIN531 - ADVANCED CORPORATE FINANCE****Long Course Title**

ADVANCED CORPORATE FINANCE

**Course Description**

Advanced corporate finance theories and their applications. Topics include long- and short-term financial planning, project valuation, capital structure policy, dividend policy, mergers and acquisitions, and risk management.

**Credits**

3

**Cross-Listed Course**

FIN431 - ADVANCED CORPORATE FINANCE

**FIN554 - INTERNATIONAL FINANCE****Long Course Title**

INTERNATIONAL FINANCE

**Course Description**

An introduction to international finance for tomorrow's global business leaders, with a focus on the financial management dimensions of leading a multinational enterprise.

**Credits**

3

**Equivalent Course(s)**

ECN554 - INTERNATIONAL ECONOMICS

**Cross-Listed Course**

FIN454 - INTERNATIONAL FINANCE

**FIN560 - INVESTMENTS****Course Description**

A study of standard investment securities, as well as an overall view of the investment decision process. Securities covered include equities, fixed income, options, futures, and mutual funds. Associated topics include financial markets, valuation models, and fundamental portfolio theory.

**Credits**

3

**Cross-Listed Course**

FIN460 - INVESTMENTS

**FIN561 - PORTFOLIO MANAGEMENT****Long Course Title**

PORTFOLIO MANAGEMENT

**Course Description**

A continuation of FIN 560 with an emphasis on the application of investment portfolio management. An understanding of the functional areas of portfolio management is stressed, including investment policy, investment strategy, portfolio construction, performance evaluation, and portfolio protection.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - FIN560 - INVESTMENTS (3)

**Cross-Listed Course**

FIN461 - PORTFOLIO MANAGEMENT

**FIN595 - INTERNSHIP IN FINANCE****Course Description**

With the supervision of a faculty advisor, the student serves as an intern in a position that enhances their disciplines educational goals. Subject to college's guidelines on internships.

**Credits**

1 - 3

**FIN601 - FIN DECIS UNDER UNCERTAINTY****Long Course Title**

FINANCIAL DECISIONS UNDER UNCERTAINTY

**Course Description**

Designed to introduce concepts and tools for financial decision-making in uncertain environments. Topics include financial statement analysis, time value of money, capital budgeting, cost of capital, and risk and return.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)
  - ECN600 - FOUNDATIONS OF ECONOMICS (3)

**FIN620 - SEMINAR IN BEHAVIORAL FINANCE****Long Course Title**

SEMINAR IN BEHAVIORAL FINANCE

**Course Description**

A study of the issues and anomalies related to the psychology of financial decision-making and the psychology of financial markets. The course content will consist of readings from the behavioral finance literature with an emphasis on student discussion.

**Credits**

3

**FIN650 - SELECTED RESEARCH TOPICS****Course Description**

Research in a particular topic in finance relevant to administrative science by one student or group of students. The research paper must be an original contribution showing a research design and results that meet the highest standards of social science research.

**Credits**

3

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**First Year Experience**

**FYE101 - CHARGER SUCCESS****Long Course Title**

CHARGER SUCCESS

**Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students. (Same course as FYE 101A, FYE 101B, FYE 101D, FYE 101E, FYE 101G, FYE 101N, FYE 101S)

**Credits**

1

**FYE101A - CHARGER SUCCESS - ART,HUM,SOCS****Long Course Title**

CHARGER SUCCESS - ARTS, HUMANITIES AND SOCIAL SCIENCES

**Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**Equivalent Course(s)**

FYE101 - CHARGER SUCCESS

**FYE101B - CHARGER SUCCESS - BUSINESS****Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**FYE101D - CHARGER SUCCESS - EDUCATION****Long Course Title**

CHARGER SUCCESS - EDUCATION

**Course Description**

The purpose of Charger Success 101 is to help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**FYE101E - CHARGER SUCCESS - ENGINEERING****Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**FYE101G - CHARGER SUCCESS - GENERAL STUD****Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**FYE101H - CHARGER SUCCESS - HONORS****Long Course Title**

CHARGER SUCCESS FOR HONORS STUDENTS

**Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**FYE101N - CHARGER SUCCESS - NURSING****Long Course Title**

CHARGER SUCCESS - NURSING

**Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

**FYE101S - CHARGER SUCCESS - SCIENCE****Long Course Title**

CHARGER SUCCESS - SCIENCE

**Course Description**

The purpose of Charger Success 101 is to, help new students make a successful transition to the University of Alabama in Huntsville, both inside and outside the classroom. This course aims to foster a sense of belonging, promote engagement in the academic life of the university, and articulate to students the expectations of the University. In addition, the course will assist students to develop and apply critical thinking skills, as well as to help students to clarify their academic goals and eventual career direction. This course is mandatory for all freshman students.

**Credits**

1

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## Global Studies

**GS199 - STUDY ABROAD****Course Description**

Course will involve travel to selected countries for academic study purposes. The course is open to all UAH students with permission of the instructor. May be repeated for credit when the content of the course differs.

**Credits**

1 - 3

## **GS200 - GLOBAL SYSTEMS AND CULTURES**

### **Long Course Title**

GLOBAL SYSTEMS AND CULTURES

### **Course Description**

A multidisciplinary introduction to global studies through a focus on cultural, economic, political, and historical dimensions of interactions among world nations and cultures.

### **Credits**

3

### **Charger Foundations**

Area IV: Social & Behavioral Sciences

## **GS299 - ST: GLOBAL STUDIES ABROAD**

### **Course Description**

Course will involve travel to selected countries for academic study purposes. The course is open to all UAH students with permission of the instructor. May be repeated for credit when the content of the course differs.

### **Credits**

1 - 3

## **GS399 - STUDY ABROAD**

### **Course Description**

Course will involve travel to selected countries for academic study purposes. The course is open to all UAH students with permission of the instructor. May be repeated for credit when the content of the course differs.

### **Credits**

1 - 3

## **GS400 - GLOBAL STUDIES CAPSTONE**

### **Course Description**

Capstone independent study for students completing the Global Studies minor. Students complete a portfolio essay assignment and essays connected to the program's core competencies. Offered as needed as independent study to students in final semester of study.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - GS200 - GLOBAL SYSTEMS AND CULTURES (3)



## **GS450 - GLOBAL PROFESSIONAL PORTFOLIO**

### **Course Description**

This course serves as the capstone learning experience for students completing the Global Professional Pathways Certificate program. Students will complete the Global Professional Pathways Portfolio in which they reflect on and assess their foreign language study and experience abroad and how these learning experiences have helped them prepare for a global career in their field.

### **Credits**

1

## **GS499 - SELECTED TOPICS IN GLOBAL STU**

### **Long Course Title**

SELECTED TOPICS IN GLOBAL STUDIES

### **Course Description**

Selected topics in Global Studies. Course may also take place abroad as part of a study abroad program. May be repeated for credit with permission of Global Studies Program director.

### **Credits**

1 - 3

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## **Health & Physical Education**

## **HPE100 - AEROBICS**

### **Long Course Title**

AEROBICS

### **Course Description**

Improve cardiovascular fitness, flexibility, muscular strength and endurance, balance, and postural alignment. This class will focus on aerobic activity, specifically in the form of low- and high- impact aerobics. A wide variety of exercises will be included to provide a total-body workout.

### **Credits**

2

## **HPE105 - CARDIO DANCE**

### **Credits**

1 - 2

## **HPE109 - SPEED & PLYOMETRIC TRAINING**

### **Credits**

2

**HPE110 - WALK/JOG/RUN****Course Description**

A beginner and intermediate level course with emphasis placed on giving a positive introduction to walking, jogging, and running as a way to enhance fitness and promote weight control, and to provide a viable option for a lifetime fitness activity.

**Credits**

1

**HPE111 - CIRCUIT TRAINING****Long Course Title**

CIRCUIT TRAINING

**Credits**

2

**HPE117 - WEIGHT TRAINING****Long Course Title**

WEIGHT TRAINING

**Course Description**

Learn to safely and efficiently use strength training techniques to reach your fitness goals. Develop the skills needed to create a personalized weight training program.

**Credits**

2

**HPE120 - SWIMMING****Long Course Title**

SWIMMING

**Course Description**

Learn the basic or progress in your swimming by learning the common swim strokes and techniques. Introduction to conditioning and training and work toward improving skills and endurance bringing higher efficiency in the water.

**Credits**

1

**HPE127 - LADIES SELF-DEFENSE****Course Description**

Explore the concepts, strategies, and methods of self defense. Topics and skills include wrist escapes, falling skills, various strikes and kicks, groundwork, weaponry, and escape tactics. Further, an emphasis will be placed on developing and improving situational awareness.

**Credits**

1

**HPE129 - KUNG FU**  
**Course Description**

Kung Fu has become one of the most popular forms of martial arts. Students will be introduced to Sil Lum Tao, the first in the three forms of Wing Chun Kung Fu. The name means "little imagination" and refers to the need of the student to use their imagination in the practice and application of techniques.

**Credits**

2

**HPE130 - KARATE**  
**Long Course Title**

KARATE

**Course Description**

Learn karate techniques and acquire skills required to perform these techniques. The objective of Karate is to teach the student defensive skills through various stances and self-defense techniques.

**Credits**

2

**HPE133 - AIKIDO**  
**Credits**

1

**HPE134 - T'AI CHI**  
**Long Course Title**

T'AI CHI

**Course Description**

Learn an ancient Chinese exercise and martial art which is used to develop one's internal energy, health and well-being. The 37 postures of the short form in the Yang style will be executed.

**Credits**

2

**HPE135 - INTERMEDIATE T'AI CHI**  
**Credits**

2

**HPE136 - YOGA**  
**Credits**

1

**HPE137 - JUDO/JUJITSU****Course Description**

Judo/Jujitsu provides students with an introduction to the Japanese martial arts of Judo and Jujitsu. Focus will be on both the competition aspect of Judo and the self-defense aspects of each art including throws, take-downs, joint manipulation and chokes.

**Credits**

2

**HPE140 - BALLROOM DANCE****Course Description**

An introduction to the most popular smooth and rhythm ballroom patterns danced in America including the Waltz, Fox Trot, Tango, Cha-Cha, Rumba, Samba, Merengue, Bolero, Polka, Swing, and Mambo. Learn the appropriate skills necessary to become a social dancer, including leading, following etiquette and partner dancing.

**Credits**

2

**HPE142 - SWING DANCE****Credits**

2

**HPE144 - COUNTRY WESTERN DANCE****Credits**

1

**HPE150 - RACQUETBALL****Long Course Title**

RACQUETBALL

**Course Description**

Learn the basic of racquetball, including rules, equipment and skills. Singles (2 players), Cut throat (3 players) and Doubles (4 players) versions of racquetball will be taught. Double games during class times will be played when both safety and skill level of the players are acceptable to the instructor.

**Credits**

2

**HPE153 - TENNIS****Long Course Title**

TENNIS

**Course Description**

Students will learn the fundamentals of tennis including forehand, backhand, serve, volley, footwork, and ground strokes. There will be both singles and doubles play and a class tournament. Highlights include understanding the rules, regulations and strategies of the game.

**Credits**

1

**HPE156 - GOLF****Course Description**

Students will understand and learn the basic skills of golf, including rules, proper stance, grip and swing for all clubs. Clubs are available if needed.

**Credits**

1

**HPE167 - ROCK CLIMBING****Course Description**

\$100 fee to be paid directly to Rock Climbing facility

**Credits**

2

**HPE169 - BASKETBALL****Credits**

1

**HPE170 - VOLLEYBALL****Course Description**

Learn the fundamentals skills of volleyball including passing, setting, hitting, blocking, and serving with advanced skills in spikes and positioning also being covered. Scrimmage games will be played to practice learned skills. This course will cover the rules of volleyball and its advantage as a lifetime sport, with a focus on skill development.

**Credits**

1

**HPE174 - BILLIARDS****Credits**

1

**HPE199 - SP TOP:HLTH & PHYS ED****Long Course Title**

SPECIAL TOPICS: HEALTH AND PHYSICAL EDUCATION

**Credits**

1 - 3

**HPE221 - ADVANCED SCUBA****Course Description**

Present skills and knowledge for deep diving (80+ feet). Limited visibility diving, and advanced navigation techniques. Earn YMCA advanced open water certification. Students must provide mask, fins, and snorkel. Cost of open water dives not included in lab fee.

**Credits**

1

**HPE223 - LIFEGUARD TRAINING****Course Description**

Certification as a Red Cross approved lifeguard upon successful completion of classroom and in-water instruction and testing.

**Credits**

2

**HPE224 - WATER SAFETY INSTRUCTOR****Long Course Title**

WATER SAFETY INSTRUCTOR

**Course Description**

Techniques for teaching infant and pre-school aquatics. The American Red Cross Learn to Swim Program, and Basic Water and Emergency Water Safety courses. Includes pre-test and instructor candidate training course.

**Credits**

3

**HPE231 - INSTR AIRPLANE(IFR)RATING GR S****Long Course Title**

INSTRUMENT AIRPLANE RATING GROUND SCHOOL

**Course Description**

Provides student with knowledge needed for instrument flight instruction air training. Prepares student for FAA Instrument Flying Examination.

**Credits**

3

**HPE400 - SPECIAL TOPICS - INTERNSHIP****Long Course Title**

SPECIAL TOPICS - INTERNSHIP

**Course Description**

Innovative internship focused on working with students with disabilities. Observations, participation, and direct instruction and teaching in a middle or high school setting for a prescribed time.

**Credits**

3

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## History

**HY103 - WORLD HISTORY TO 1500****Course Description**

Explore the historical development of peoples and cultures from their beginnings to 1500. Trace cross-cultural interactions among societies, states, and economies of Asia, Europe, Africa, the Americas and Oceania.

**Credits**

3

**Charger Foundations**

Area IV: History

**HY104 - WORLD HISTORY SINCE 1500****Course Description**

Explore global interdependence from the period of transoceanic exploration to the present. Trace cross-cultural interactions among societies, states, and economies of Asia, Europe, Africa, the Americas, and Oceania.

**Credits**

3

**Charger Foundations**

Area IV: History

**HY221 - UNITED STATES TO 1877****Long Course Title**

UNITED STATES TO 1877

**Course Description**

Discovery of America through the Civil War and Reconstruction.

**Credits**

3

**Charger Foundations**

Area IV: History

**HY222 - UNITED STATES SINCE 1877****Course Description**

United States from the end of the Civil War era to the present.

**Credits**

3

**Charger Foundations**

Area IV: History

## **HY300 - CRAFT OF HISTORY**

### **Long Course Title**

CRAFT OF HISTORY

### **Course Description**

Introduction to historical methods and thought, designed to prepare history majors for upper-level coursework. Required of all history majors, including transfer students. Open to non-history majors.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - HY103 - WORLD HISTORY TO 1500 (3)
  - HY104 - WORLD HISTORY SINCE 1500 (3)

## **HY310 - INTRODUCTION TO PUBLIC HISTORY**

### **Long Course Title**

INTRODUCTION TO PUBLIC HISTORY

### **Course Description**

Introduces the interdisciplinary field of public history, including historic preservation, cultural resource management, local and state history, methodology, historical archaeology, museum studies, oral history, and archival management through academic training and practical experience.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Sophomore or higher

## **HY311 - HISTORIC ARCHAEOLOGY**

### **Long Course Title**

HISTORIC ARCHAEOLOGY

### **Course Description**

Introduces intellectual and practical concepts using elements of research, fieldwork, analysis, and interpretation to explore and recreate the documented and undocumented past.

### **Credits**

3

## **HY312 - CULTURAL RESOURCE MANAGEMENT**

### **Course Description**

Cultural resource management encompasses recognition description, maintenance, security, and overall management of historical items, places, and ideas through preservation and protection.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Sophomore or higher



**HY325 - HISTORY OF ALABAMA****Course Description**

The state's past from colonial times to the present with emphasis on its place in United States history.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY329 - IMPERIAL ROME****Course Description**

Roman Empire from the Principate to the barbarian invasions.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY331 - WORLD OF MIDDLE AGES****Course Description**

Survey of the origins and development of medieval society in Europe from the fall of Rome to the Age of Discovery, including the Latin West, Byzantium, and Islamic world.

**Credits**

3

**HY367 - WOMEN IN U.S. HISTORY****Course Description**

Women in the United States from the colonial period to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY368 - AMERICAN ENVIRONMENTAL HISTORY****Course Description**

Explores the interrelationship of people and the environment in American history from 1500 to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY370 - TECHNOLOGY IN AMERICAN HISTORY****Long Course Title**

TECHNOLOGY IN AMERICAN HISTORY

**Course Description**

Explores the history of the interrelationship of people and technology in American history from 1600 to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY371 - US MILITARY HY FRM INDP TO PRS****Long Course Title**

US MILITARY HY INDEPENDENCE TO PRESENT

**Course Description**

Explores the evolution of the U.S. military from the War of Independence to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY381 - COLONIAL LATIN AMERICA****Long Course Title**

COLONIAL LATIN AMERICA

**Course Description**

This course surveys the history of Colonial Latin America from the Hispanic period to the wars of independence in the nineteenth century.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY382 - MODERN LATIN AMERICAN****Course Description**

This course surveys the history of Latin America from the nineteenth century to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY383 - FOOD AND WORLD HISTORY****Long Course Title**

FOOD AND WORLD HISTORY

**Course Description**

Examines the role of food and drink in various historical settings.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY384 - ISLAMIC WORLD TO 1800****Long Course Title**

ISLAMIC WORLD TO 1800

**Course Description**

This course explores how Islam emerged as a civilization and connected geographic areas across the globe. Topics include: the prophet Muhammad; early Arab conquests; the Sunni-Shiite split; the expansion of the Islamic world into Europe, Africa, and Asia; and the challenge of European imperialism.

**Credits**

3

**HY385 - MODERN MIDDLE EAST****Course Description**

This course seeks to establish a historical basis for understanding the current events of the modern Middle East (1800-present). Topics include: the making of the modern Middle East both before and after WWI; the Arab-Israeli conflict; and the relationship between the U.S. and the Middle East.

**Credits**

3

**HY390 - GENDER & SEXUALITY MODERN EUROPE****Long Course Title**

GENDER & SEXUALITY IN MODERN EUROPE

**Course Description**

Explores the history of gender and sexuality in Europe from the Enlightenment to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY391 - VOICES&VIOLENCE Early Mod Euro****Long Course Title**

VOICES & VIOLENCE: THE MAKING OF EARLY MODERN EUROPE

**Course Description**

Examination of the economic, scientific, social, political, and cultural developments in Europe from the Renaissance to the French Revolution.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY392 - EUROPE SINCE 1815****Long Course Title**

EUROPE SINCE 1815

**Course Description**

Europe from the French Revolution to the present.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY393 - HIST OF MOD OLYMPIC GAMES****Long Course Title**

HISTORY OF THE MODERN OLYMPIC GAMES

**Course Description**

Explores the emergence of the modern Olympic Games and the major changes in their trajectory from the late 19th century through the present.

**Credits**

3

**Restrictions**

None

**HY399 - SPECIAL TOPIC IN HISTORY****Course Description**

Intensive examination of particular problems, periods, or topics in history.

**Credits**

3

**Prerequisites**

- Must have a class standing of Sophomore or higher

**HY401 - DAILY LIFE IN ANCIENT ROME****Long Course Title**

DAILY LIFE IN ANCIENT ROME

**Course Description**

This course will re-create the daily lives of the ancient Romans using secondary readings, ancient literature, archaeology, and film. It focuses on the lives of ordinary people, with an eye to their struggles, everyday practices, beliefs, values, and mentalities.

**Credits**

3

**Cross-Listed Course**

HY501 - DAILY LIFE IN ANCIENT ROME

**HY410 - SPEC TOPICS IN PUBLIC HISTORY****Course Description**

Intensive examination of a particular problem, aspect, or methodology in public history.

**Credits**

3

**Cross-Listed Course**

HY510 - SPECIAL TOPICS PUBLIC HISTORY

**HY413 - THE OLD SOUTH****Long Course Title**

THE OLD SOUTH

**Course Description**

Southern society, economics, politics and culture concentrating on the nineteenth century South through Reconstruction.

**Credits**

3

**Cross-Listed Course**

HY513 - THE OLD SOUTH

**HY414 - THE NEW SOUTH****Long Course Title**

THE NEW SOUTH

**Course Description**

Post-Reconstruction South emphasizing the economic, social, and political readjustments made during the twentieth century. Open to students who have completed 12 semester hours in history or senior standing or have permission of instructor.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Must have a class standing of Senior
  - Instructor Permission
  - Earned at least 12 hours from:

Must earn minimum grade of D- in any selected course  
Courses from HY -

**Cross-Listed Course**

HY514 - THE NEW SOUTH

**HY424 - THE ATLANTIC WORLD****Long Course Title**

THE ATLANTIC WORLD

**Course Description**

Examines interactions across the Atlantic Ocean among Africans, Americans, and Europeans. This course meets the requirements for either American or non-American credit in the history major.

**Credits**

3

**Equivalent Course(s)****Cross-Listed Course**

HY524 - THE ATLANTIC WORLD

**HY426 - COLONIAL AMERICA****Course Description**

Explores the founding of New World colonies, including political, social, economic, and religious developments during the colonial period.

**Credits**

3

**Cross-Listed Course**

HY526 - COLONIAL AMERICA

**HY428 - EARLY AMERICAN REPUBLIC****Course Description**

Political, social, and economic changes between the American Revolution and the nineteenth century that laid the foundation for the United States.

**Credits**

3

**Cross-Listed Course**

HY528 - EARLY AMERICAN REPUBLIC

**HY429 - CIVIL WAR & RECONSTRUCTION****Course Description**

An examination of the major political, economic, and social developments in the United States during the Civil War and Reconstruction eras.

**Credits**

3

**Cross-Listed Course**

HY529 - CIVIL WAR & RECONSTRUCTION

**HY437 - THE RISE OF MODERN AMER****Long Course Title**

THE RISE OF MODERN AMERICA

**Course Description**

Economic and social changes, imperialism, and the growth in government in the United States from 1877 to the 1920s.

**Credits**

3

**Cross-Listed Course**

HY537 - THE RISE OF MODERN AMER

**HY438 - MODERN AMERICA****Course Description**

American society, politics, economics, and foreign affairs from the end of World War I to the origins of the Cold War.

**Credits**

3

**Cross-Listed Course**

HY538 - MODERN AMERICA

**HY439 - RECENT AMERICAN HISTORY****Course Description**

Contemporary America from the 1950s to the present, analyzing both domestic and foreign affairs.

**Credits**

3

**Cross-Listed Course**

HY539 - RECENT AMERICAN HISTORY

**HY440 - FOREIGN REL U.S. SINCE 1920****Course Description**

United States as a world power. American involvement in World War II, Vietnam, and the Cold War, and the growth of American presence in Asia, Latin America, and the Middle East.

**Credits**

3

**Cross-Listed Course**

HY540 - FOREIGN REL U.S. SINCE 1920

**HY451 - SCIENCE & RELIGION IN HISTORY****Course Description**

Integrated survey of the history of science and religion in mostly Western contexts from Greek. Antiquity to present debates.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - HY300 - CRAFT OF HISTORY (3)

**HY473 - U.S.-LATIN AMERICAN RELATIONS****Long Course Title**

U.S. AND LATIN AMERICAN RELATIONS

**Course Description**

This class focuses on the history of political, economic, and cultural interactions between Latin America and the United States from 1800 to the present. Topics include military intervention, trade, cultural exchanges, the Cold War, the drug war, and immigration.

**Credits**

3

**Cross-Listed Course**

HY573 - US-LATIN AMERICAN RELATIONS



**HY474 - RENAISSANCE & REFORMATION****Course Description**

Selected topics in the Italian Renaissance and European Reformation.

**Credits**

3

**Cross-Listed Course**

HY574 - RENAISSANCE & REFORMATION

**HY475 - SECTARIANISM ISLAMIC WORLD****Long Course Title**

SECTARIANISM IN THE ISLAMIC WORLD

**Course Description**

This course focuses on sectarianism, the practice and rhetoric surrounding marginalization of certain social-religious groups in the Islamic world. It explores the historical foundations of sectarianism (from early 7th century to today) both within the Islamic world and across the globe.

**Credits**

3

**Cross-Listed Course**

HY575 - SECTARIANISM ISLAMIC WORLD

**HY476 - BEING YOUNG MODERN MIDDLE EAST****Course Description**

This course focuses on the lives of young men and women of the Modern Middle East. It explores how children and youth experienced historical phenomena in the region, the ways in which these experiences affected the foundations of their adulthood, and how their actions shaped historical events.

**Credits**

3

**Cross-Listed Course**

HY576 - BEING YOUNG MODERN MIDDLE EAST

**HY480 - ROMANS&BARBARIANS LATE ANTIQTY****Course Description**

This course explores the dynamic world of Late Antiquity including political developments, social and religious transformation, and exchange patterns in the Mediterranean. It is a history of cultural interaction, continuity, and change during a formative period in western civilization.

**Credits**

3

**Cross-Listed Course**

HY580 - ROMANS&BARBARIANS LATE ANTIQTY

**HY481 - EMPIRES AND NATIONS****Course Description**

Thematic focus on empires and nations as political and cultural constructs in European and world history. Students may take HY 481 more than once for credit ONLY IF 1) a different instructor teaches each offering, and 2) the temporal and/or geographic focus is distinct each time.

**Credits**

3

**Cross-Listed Course**

HY581 - EMPIRES AND NATIONS

**HY482 - COMPTV SLAVERY & ABOLITION****Course Description**

Explore what slavery has meant in the ancient world, Indian Ocean, Africa, the United States, and/or other locations over time.

**Credits**

3

**Cross-Listed Course**

HY582 - COMPARTVE SLAVERY & ABOLITION

**HY483 - GENDER & SEXUALITY LATIN AMERI****Long Course Title**

GENDER & SEXUALITY IN LATIN AMERICA

**Course Description**

Studies the history of women, gender and sexuality in Latin America from the colonial period to the present.

**Credits**

3

**Cross-Listed Course**

HY583 - GENDER & SEXUALITY LATIN AMERI

**HY484 - LATIN AMERICAN HIST THRU FILM****Long Course Title**

LATIN AMERICAN HISTORY THRU FILM

**Course Description**

Latin American history through the perspective of fictional films.

**Credits**

3

**Cross-Listed Course**

HY584 - LATIN AMERICAN HY THROUGH FILM

## **HY485 - NAZI GERMANY AND THE HOLOCAUST**

### **Course Description**

Seminar course on the historiography of Nazi Germany and the Holocaust.

### **Credits**

3

### **Cross-Listed Course**

HY585 - NAZI GERMANY AND THE HOLOCAUST

## **HY490 - HISTORY CAPSTONE**

### **Long Course Title**

HISTORY CAPSTONE

### **Course Description**

Students will complete a substantial research project based on primary sources that integrates historical context and engages with appropriate scholarly secondary sources. Students may also complete assignments that support career preparation. Required of all history majors. Students should take in their last two semesters in the program.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - HY300 - CRAFT OF HISTORY (3)
  - Earned at least 6 hours from:

Must earn minimum grade of D- in any selected course  
Courses from HY 300-499

## **HY492 - PUB MEMORY & INTERP**

### **Long Course Title**

PUBLIC MEMORY & INTERPRETATION

### **Course Description**

Examines how public memory is created by looking at the social, political, and economic forces that shape public history and considers how historical knowledge is conveyed to the public.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Instructor Permission
  - Earned at least 6 hours from:

Must earn minimum grade of D- in any selected course  
Courses from -

### **Cross-Listed Course**

HY592 - PUBLIC MEMORY & INTERP

**HY493 - FUNDAMENTALS OF ARCHIVES****Course Description**

Survey of basic archival theory and practice, with emphasis on the role of the archivist in contemporary society.

**Credits**

3

**Cross-Listed Course**

HY593 - FUNDAMENTALS OF ARCHIVES

**HY494 - DEVELOPING DIGITAL ARCHIVES****Course Description**

Survey of the theory and practice of developing digital access tools in archives, libraries, and museums.

**Credits**

3

**Equivalent Course(s)**

HY594 - DEVELOPING DIGITAL ARCHIVES

**HY495 - PUBLIC HISTORY INTERNSHIP****Long Course Title**

PUBLIC HISTORY INTERNSHIP

**Course Description**

A semester-long public history internship for completing a significant project using historical skills as a professional usually in an off-campus setting. Students must complete 125 hours of work during their internship. May not be taken at the same time as HY490. Permission of instructor or chair is required.

**Credits**

3

**Prerequisites**

- Instructor Permission Required

**Cross-Listed Course**

HY595 - PUBLIC HISTORY INTERNSHIP

**HY498 - STUDIES IN HISTORY****Long Course Title**

STUDIES IN HISTORY

**Course Description**

A readings or research class on a particular problem, period or topic in history. This course may be repeated for credit.

**Credits**

1 - 3

**Cross-Listed Course**

HY598 - STUDIES IN HISTORY

**HY499 - INDEPENDENT STUDY****Course Description**

In exceptional circumstances, a student and professor may work together on a specialized topic.

**Credits**

3

**Prerequisites**

- Admitted to: BA HISTORY

**HY501 - DAILY LIFE IN ANCIENT ROME****Long Course Title**

DAILY LIFE IN ANCIENT ROME

**Course Description**

This course will re-create the daily lives of the ancient Romans using secondary readings, ancient literature, archaeology, and film. It focuses on the lives of ordinary people, with an eye to their struggles, everyday practices, beliefs, values and mentalities.

**Credits**

3

**Cross-Listed Course**

HY401 - DAILY LIFE IN ANCIENT ROME

**HY510 - SPECIAL TOPICS PUBLIC HISTORY****Long Course Title**

SPECIAL TOPICS PUBLIC HISTORY

**Course Description**

Public history and its application in areas such as public policy, historical editing, local and community history, archival collection (including electronic databases) and historic preservation, oral history, museum programs, and historical sites interpretation.

**Credits**

3

**Cross-Listed Course**

HY410 - SPEC TOPICS IN PUBLIC HISTORY

**HY513 - THE OLD SOUTH****Course Description**

Southern society, economics, politics and culture concentrating on the nineteenth century South through Reconstruction.

**Credits**

3

**Cross-Listed Course**

HY413 - THE OLD SOUTH

**HY514 - THE NEW SOUTH****Long Course Title**

THE NEW SOUTH

**Course Description**

The post-Reconstruction South emphasizing the economic, social, and political readjustments made during the twentieth century.

**Credits**

3

**Cross-Listed Course**

HY414 - THE NEW SOUTH

**HY524 - THE ATLANTIC WORLD****Long Course Title**

THE ATLANTIC WORLD

**Course Description**

Examines interactions across the Atlantic Ocean among Africans, Americans, and Europeans. This course meets the requirements for either American or non-American credit.

**Credits**

3

**Cross-Listed Course**

HY424 - THE ATLANTIC WORLD

**HY526 - COLONIAL AMERICA****Long Course Title**

COLONIAL AMERICA

**Course Description**

Explores the founding of New World colonies, including political, social, economic, and religious developments during the colonial period.

**Credits**

3

**Equivalent Course(s)**

HY426 - COLONIAL AMERICA

**HY528 - EARLY AMERICAN REPUBLIC****Course Description**

Political, social and economic changes between the American Revolution and the nineteenth century that laid the foundation for the United States.

**Credits**

3

**Cross-Listed Course**

HY428 - EARLY AMERICAN REPUBLIC

**HY529 - CIVIL WAR & RECONSTRUCTION****Long Course Title**

CIVIL WAR & RECONSTRUCTION

**Course Description**

This course will examine the major historical events and modern historiographical interpretations of the Civil War and Reconstruction period in American history. Special focus will be given to the following themes: social, economic, military, political, constitutional, and intellectual.

**Credits**

3

**Cross-Listed Course**

HY429 - CIVIL WAR & RECONSTRUCTION

**HY537 - THE RISE OF MODERN AMER****Long Course Title**

THE RISE OF MODERN AMERICA

**Course Description**

Economic and social changes, imperialism, and the growth of government in the United States from 1877 to the 1920s.

**Credits**

3

**Cross-Listed Course**

HY437 - THE RISE OF MODERN AMER

**HY538 - MODERN AMERICA****Long Course Title**

MODERN AMERICA

**Course Description**

American society, politics, economics, and foreign affairs from the end of World War I to the origins of the Cold War.

**Credits**

3

**Cross-Listed Course**

HY438 - MODERN AMERICA

**HY539 - RECENT AMERICAN HISTORY****Course Description**

Contemporary America from the 1950s to the present analyzing both domestic and foreign affairs.

**Credits**

3

**Cross-Listed Course**

HY439 - RECENT AMERICAN HISTORY

**HY540 - FOREIGN REL U.S. SINCE 1920****Course Description**

The United States as a world power. American involvement in World War II, the Cold War, and in Asia, Latin America, and the Middle East.

**Credits**

3

**Cross-Listed Course**

HY440 - FOREIGN REL U.S. SINCE 1920

**HY572 - US MILITARY HISTORY SINCE 1920****Course Description**

The United States armed forces from 1920 to the present. The class will enhance understanding of the development and evolution of American strategy, doctrine, and operational issues.

**Credits**

3

**Equivalent Course(s)****Cross-Listed Course**

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**HY573 - US-LATIN AMERICAN RELATIONS****Long Course Title**

US-LATIN AMERICAN RELATIONS

**Course Description**

This class focuses on the history of political, economic, and cultural interactions between Latin America and the United States from 1800 to the present. Topics include military intervention, trade, cultural exchanges, the Cold War, the drug war, and immigration.

**Credits**

3

**Cross-Listed Course**

HY473 - U.S.-LATIN AMERICAN RELATIONS

**HY574 - RENAISSANCE & REFORMATION****Course Description**

Selected topics in the Italian Renaissance and European Reformation.

**Credits**

3

**Cross-Listed Course**

HY474 - RENAISSANCE & REFORMATION



**HY575 - SECTARIANISM ISLAMIC WORLD****Course Description**

This course focuses on sectarianism, the practice and rhetoric surrounding marginalization of certain social-religious groups in the Islamic world. It explores the historical foundations of sectarianism (from early 7th century to today) both within the Islamic world and across the globe.

**Credits**

3

**Cross-Listed Course**

HY475 - SECTARIANISM ISLAMIC WORLD

**HY576 - BEING YOUNG MODERN MIDDLE EAST****Long Course Title**

BEING YOUNG IN THE MODERN MIDDLE EAST

**Course Description**

This course focuses on the lives of young men and women of the Modern Middle East. It explores how children and youth experienced historical phenomena in the region, the ways in which these experiences affected the foundations of their adulthood, and how their actions shaped historical events.

**Credits**

3

**Cross-Listed Course**

HY476 - BEING YOUNG MODERN MIDDLE EAST

**HY580 - ROMANS&BARBARIANS LATE ANTIQTY****Long Course Title**

ROMANS & BARBARIANS LATE ANTIQUITY

**Course Description**

This course explores the dynamic world of Late Antiquity including political developments, social and religious transformation, and exchange patterns in the Mediterranean. It is a history of cultural interaction, continuity, and change during a formative period in western civilization.

**Credits**

3

**Cross-Listed Course**

HY480 - ROMANS&BARBARIANS LATE ANTIQTY

**HY581 - EMPIRES AND NATIONS****Long Course Title**

EMPIRES AND NATIONS

**Course Description**

Thematic focus on empires and nations as political and cultural constructs in European and world history. Students may take HY581 more than once for credit ONLY IF 1) a different instructor teaches each offering, and 2) the temporal and/or geographic focus is distinct each time.

**Credits**

3

**Cross-Listed Course**

HY481 - EMPIRES AND NATIONS

**HY582 - COMPARTVE SLAVERY & ABOLITION****Long Course Title**

GENDER & SEXUALITY IN LATIN AMERICA

**Course Description**

Explore slavery around the world over time. Topics in the ancient world, Indian Ocean, Africa, the United States, and other locations from ancient times to the present.

**Credits**

3

**Cross-Listed Course**

HY482 - COMPTV SLAVERY & ABOLITION

**HY583 - GENDER & SEXUALITY LATIN AMERI****Long Course Title**

GENDR & SEXUALITY IN LATIN AMERICA

**Course Description**

Studies in history of women, gender and sexuality in Latin America from the colonial period to the present.

**Credits**

3

**Cross-Listed Course**

HY483 - GENDER & SEXUALITY LATIN AMERI

**HY584 - LATIN AMERICAN HY THROUGH FILM****Credits**

3

**Cross-Listed Course**

HY484 - LATIN AMERICAN HIST THRU FILM

## **HY585 - NAZI GERMANY AND THE HOLOCAUST**

### **Course Description**

Seminar course on the historiography of Nazi Germany and the Holocaust.

### **Credits**

3

### **Cross-Listed Course**

HY485 - NAZI GERMANY AND THE HOLOCAUST

## **HY590 - RESEARCH SEMINAR IN HISTORY**

### **Long Course Title**

RESEARCH SEMINAR IN HISTORY

### **Course Description**

Students will complete a substantial research project based on primary sources that integrates historical context, engages relevant historiography, and interacts with appropriate scholarly secondary sources. Students may also complete assignments to support career preparation. Must have completed HY300. If students have taken 490, a different research topic must be completed for HY590. MA students are required to complete HY590 or a thesis.

### **Credits**

3

### **Prerequisites**

- 21 hours from any HY 500 - 600 level course(s)

### **Restrictions**

## **HY592 - PUBLIC MEMORY & INTERP**

### **Long Course Title**

PUBLIC MEMORY & INTERPRETATION

### **Course Description**

Examines how public memory is created by looking at the social, political, and economic forces that shape public history and considers how historical knowledge is conveyed to the public.

### **Credits**

3

### **Cross-Listed Course**

HY492 - PUB MEMORY & INTERP

**HY593 - FUNDAMENTALS OF ARCHIVES****Course Description**

Survey of basic archival theory and practice, with emphasis on the role of the archivist in contemporary society.

**Credits**

3

**Cross-Listed Course**

HY493 - FUNDAMENTALS OF ARCHIVES

**HY594 - DEVELOPING DIGITAL ARCHIVES****Long Course Title**

DEVELOPING DIGITAL ARCHIVES

**Course Description**

Survey of the theory and practice of developing digital access tools in archives, libraries, and museums.

**Credits**

3

**Cross-Listed Course**

HY494 - DEVELOPING DIGITAL ARCHIVES

**HY595 - PUBLIC HISTORY INTERNSHIP****Course Description**

Students will participate in a semester-long public history internship and be responsible for completing a significant project using historical skills in a professional setting. Students must complete a minimum of 125 hours of work during their internship.

**Credits**

3

**Cross-Listed Course**

HY495 - PUBLIC HISTORY INTERNSHIP

**HY598 - STUDIES IN HISTORY****Long Course Title**

STUDIES IN HISTORY

**Course Description**

A readings or research class on a particular problem, period or topic in history. This course may be repeated for credit.

**Credits**

1 - 3

**Cross-Listed Course**

HY498 - STUDIES IN HISTORY

**HY599 - INDEPENDENT STUDY****Course Description**

In exceptional circumstances, a student and professor may work together on a specialized topic.

**Credits**

3

**Prerequisites**

- Admitted to: MA HY

**HY605 - INTRODUCTION TO HISTORIOGRAPHY****Course Description**

Examination of historiography and historiographical topics and trends. Required for history graduate students. Fall only.

**Credits**

3

**HY614 - STUDIES IN SOUTHERN HY****Course Description**

Research, writing, and critical examination of selected topics in nineteenth- and twentieth-century southern history.

**Credits**

3

**HY618 - STUDIES EARLY AMER HY****Course Description**

Research, writing, and critical examination of selected topics in early American history from 1607-1800.

**Credits**

3

**HY619 - STUDIES 19TH CENT AM HY****Long Course Title**

STUDIES IN 19TH CENTURY AMERICAN HISTORY

**Course Description**

Research, writing, and critical examination of selected topics in nineteenth-century American history.

**Credits**

3

**HY620 - STUDIES 20TH CENT AM HY****Course Description**

Research, writing, and critical examination of selected topics in twentieth-century American history.

**Credits**

3

**HY650 - RESEARCH METHODS IN HY**  
**Long Course Title**

RESEARCH METHODS IN HISTORY

**Course Description**

Exploration of contemporary research methods such as archival research, paleography, quantitative methods, and state/local research techniques.

**Credits**

3

**HY680 - STUDIES/EARLY MOD EUROPE**

**Course Description**

Research, writing, and critical examination of selected topics in the field of early modern European history.

**Credits**

3

**HY685 - HISTORY OF SCIENCE**

**Long Course Title**

HISTORY OF SCIENCE

**Course Description**

Research, writing and critical examination of selected topics in the history of science.

**Credits**

3

**HY686 - READING ANCIENT ROME HY**

**Long Course Title**

READINGS IN ANCIENT ROMAN HISTORY

**Course Description**

This seminar introduces the main historiographical debates in the study of ancient Rome, from the Republic to Late Antiquity. It covers the following topics: Roman institutions, politics, and strategy; Society and daily life; religious revolution and the integration of barbarians.

**Credits**

3

**HY687 - STUDIES MIDDLE EAST HISTORY**

**Course Description**

Research, writing, and critical examination of selected topics in modern Middle East history (late 1800s-present).

**Credits**

3

**HY690 - STUDIES IN MODERN EUROPE****Course Description**

Research, writing, and critical examination of selected topics in the field of modern European history.

**Credits**

3

**HY695 - STUDIES IN WORLD HISTORY****Course Description**

Research, writing and critical examination of selected topics in the study and teaching of world history.

**Credits**

3

**HY696 - SPECIAL TOPICS IN HISTORY****Long Course Title**

SPECIAL TOPICS IN HISTORY

**Course Description**

A readings or research class on a particular problem, period, region or topic in history. This course may be repeated for credit.

**Credits**

3

**HY698 - INDEPENDENT RESEARCH PROJECT****Long Course Title**

INDEPENDENT RESEARCH PROJECT

**Course Description**

Supervised individual research project.

**Credits**

3

**HY699 - MASTER'S THESIS****Course Description**

Required each semester a student is working and receiving direction on a master's thesis. A minimum of two terms is required but no more than six hours credit is allowed for the thesis.

**Credits**

1 - 3

## **HON101 - INTRO TO HONORS RESEARCH**

### **Course Description**

Introduction to research methods and information literacy for new Honors Students. Helps students transition to research and coursework commensurate with Honors College standards

### **Credits**

1

### **Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

### **Equivalent Course(s)**

FYE101 - CHARGER SUCCESS

## **HON201 - SCHOLARSHIPS GRAD SCHOOL**

### **Long Course Title**

SCHOLARSHIPS AND TOP GRADUATE SCHOOLS

### **Course Description**

Assist select Honors Students to prepare and apply for prestigious national scholarships and top graduate programs.

### **Credits**

1

### **Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

## **HON301 - HONORS SPECIAL SEMINAR**

### **Long Course Title**

HONORS SPECIAL SEMINAR

### **Course Description**

Intensive, discussion-based, interdisciplinary exploration of contemporary topics in the sciences, social sciences, humanities, and engineering. Topics will be decided by instructors and will vary by term. May be team taught. Open only to Honors Students.

### **Credits**

1 - 2

### **Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)



**HON321 - ISE 321 SUPPLEMENT****Long Course Title**

HONORS ISE 321 SUPPLEMENT

**Course Description**

Discussion-based class covering topics in ISE 321 in greater detail. ISE 321 must be taken concurrently or prior to enrolling in HON 321. Honors Students earn 4 hours Honors credit (1 hour for HON 321 + 3 hours for ISE 321).

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Student must have the following placement: Honors College (PLHP 7777)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - ISE321 - ENGINEERING ECONOMY (3)

**HON399 - HONORS INTERDISCIPLINARY SEM****Course Description**

Interdisciplinary study of a selected topic. The seminar will facilitate serious appraisal of an issue that crosses disciplinary boundaries and that can be explored using different scholarly methodologies.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

**HON400 - HONORS INTERNSHIP****Long Course Title**

HONORS INTERNSHIP

**Course Description**

Active involvement in a business enterprise, professional organization, or government agency that has particular interest and relevance to the student's course of study. The outside entity must identify a mentor who will keep regular contact with the student. Requires the student to maintain a log of activities and produce a semester-end report. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis. Approval of the Honors College Dean.

**Credits**

1 - 6

**Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

**HON401 - HON ENGINEERING CAPSTONE****Long Course Title**

HONORS ENGINEERING CAPSTONE

**Course Description**

Course provides support and mentoring for Honors Students wishing to use their Engineering Senior Design course to complete their Honors Capstone.

**Credits**

1

**Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

**HON499 - HONORS THESIS****Course Description**

Individual research under direction of a faculty advisor. May be taken for up to 6 semester hours of credit.

**Credits**

1 - 3

**Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

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## Industrial & Systems Engineering

**ISE224 - INTRO INDUSTRIAL & SYSTEMS****Course Description**

Overview of industrial engineering concepts. Includes history and development of classical industrial engineering; documentation and computational methods; basic work methods and measurement; manufacturing systems; and economic decision analysis.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EGR101 - INTRO COMPUTING ENGINEERS (3)

**ISE321 - ENGINEERING ECONOMY****Long Course Title**

ENGINEERING ECONOMY

**Course Description**

Economic evaluation of engineering alternatives. Interest, time-value of investments, depreciation and income taxes, break-even cost analysis. Sophomore standing.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Must have a class standing of Sophomore or higher

**ISE324 - WORK DESIGN****Course Description**

Principles of methods analysis and ergonomics to fit a task and workstation to the human operator including work measurement and tools, work sampling, job analysis, anthropometric data, and workplace design. Laboratory exercises focus on the implementation of lean principles. (Same as PY 324)

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - ISE390 - PROB & ENGR STATISTICS I (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)

**Equivalent Course(s)**

PY324 - WORK DESIGN

**ISE327 - MANAGEMENT SYSTEMS ANALYSIS****Long Course Title**

MANAGEMENT SYSTEMS ANALYSIS

**Course Description**

Formal organization structures and functions. Analysis of organization planning leading toward the accomplishment of goals. Techniques for making decisions within formal organizations, together with ethical constraints. Emphasis on technical writing.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE390 - PROB & ENGR STATISTICS I (3)

**ISE328 - INTRO SYSTEMS ENGINEERING****Long Course Title**

INTRODUCTION TO SYSTEMS ENGINEERING

**Course Description**

Development of a systems framework for the design and realization of systems, with emphasis on the conception, design and management of systems in complex environments. Topics include systems concepts, requirements, architecture, evaluation, integration, trades, and object oriented methods and concepts.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**ISE340 - OPERATIONS RESEARCH****Course Description**

Fundamental methods, models and computational techniques of operations research. Linear programming including transportation, assignment of simplex algorithms. Queuing theory.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE390 - PROB & ENGR STATISTICS I (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

**ISE390 - PROB & ENGR STATISTICS I****Long Course Title**

PROBABILITY & ENGINEERING STATISTICS I

**Course Description**

Engineering uses of probability, discrete and continuous probability distributions including the binomial, Poisson, hypergeometric, normal, uniform, lognormal, and exponential distributions. Statistical sampling, distributions of means, variances, and proportions. Hypothesis testing and confidence intervals.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA201 - CALCULUS III (4)

**ISE391 - PROB/ENGR STAT II****Long Course Title**

PROBABILITY AND ENGINEERING STATISTICS II

**Course Description**

Continuation of ISE 390 with regression analysis, analytics of variance, and nonparametric statistics. Introduction to design of engineering experiments, and computer-based solution of large-scale problems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE390 - PROB & ENGR STATISTICS I (3)

**ISE402 - INDUSTRIAL & ORGANIZA PSY****Course Description**

Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems. Senior standing. (Same as PY 402/502)

**Credits**

3

**Prerequisites**

- Must have a class standing of Senior

**Equivalent Course(s)**

PY402 - INDUSTRIAL & ORGANIZA PSY

**Cross-Listed Course**

ISE502 - INDUSTRIAL & ORGANIZA PSY

**ISE403 - HUMAN FACTORS PSYCHOLOGY****Course Description**

Study of human performance in human-technology-environment systems. Consideration of human capabilities and limitations as related to controls and displays, and the role of human cognition in decision-making and training effectiveness. Senior standing. (Same as PY 403/503)

**Credits**

3

**Prerequisites**

- Must have a class standing of Senior

**Equivalent Course(s)**

PY403 - HUMAN FACTORS PSYCHOLOGY

**Cross-Listed Course**

ISE503 - HUMAN FACTORS PSYCHOLOGY

**ISE421 - IMPROVING HEALTHCARE SYST****Long Course Title**

IMPROVING HEALTHCARE SYSTEMS

**Course Description**

Overview of healthcare systems with emphasis on departments; functions and improving operational performance. Lean concepts and techniques are introduced as they specifically apply in a healthcare environment. Topics include workplace organization; patient and material flow; pull systems; value stream mapping; practical problem solving and root cause analysis. Multiple hands-on simulations and laboratory exercises are utilized to demonstrate the concepts.

**Credits**

3

**Cross-Listed Course**

ISE521 - IMPROVING HEALTHCARE SYSTEMS

**ISE422 - HEALTHCARE SYST ENGR****Long Course Title**

HEALTHCARE SYSTEMS ENGINEERING

**Course Description**

This course explores and introduces students to the systematic and quantitative analysis of healthcare systems. The purpose of this class is to increase the student's understanding of how to apply proven industrial and systems engineering methods to healthcare related problems. Potential topics include: healthcare, financing, health analytics, lean and six sigma as they relate to healthcare, reliability and patient safety, capacity management and healthcare logistics.

**Credits**

3

**Cross-Listed Course**

ISE522 - HEALTHCARE SYSTEMS ENGINEERING

**ISE423 - INTR STATISTICAL QUALITY CONTR****Course Description**

Introduces statistical theory and techniques to control quality of manufacturing products. Provides a solid foundation in Statistical Quality Control. The Six Sigma methodology is also introduced in this course. Students can take the certification exam to earn Green Belt in Six Sigma.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - ISE391 - PROB/ENGR STAT II (3)

**Cross-Listed Course**

ISE523 - INTR STATISTICAL QUALITY CONTR

**ISE426 - DSGN & ANALY OF EXPERIM****Long Course Title**

DESIGN & ANALYSIS OF EXPERIMENTS

**Course Description**

Advanced topics in statistical experiments with emphasis on the design aspect. Factorial designs, including fractional replication and confounding. Includes computer laboratory exercises. (Same as ISE 526).

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE391 - PROB/ENGR STAT II (3)

**Cross-Listed Course**

ISE426 - DSGN & ANALY OF EXPERIM

**ISE428 - SYSTEMS ANALYSIS & DESIGN I****Long Course Title**

SYSTEMS ANALYSIS & DESIGN I

**Course Description**

Philosophy and methods of industrial and non-industrial systems analysis and design. Methods of systems definition, analysis, simplification, evaluation, and optimization. Design project required. Ethics and technical writing are emphasized. Senior Standing.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Earn a minimum grade of C- in all of the following:
    - ISE224 - INTRO INDUSTRIAL & SYSTEMS (3)
    - ISE321 - ENGINEERING ECONOMY (3)
    - ISE391 - PROB/ENGR STAT II (3)

**ISE429 - SYS ANALYSIS/DESIGN II****Course Description**

Continuation of design project begun in ISE 428.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE428 - SYSTEMS ANALYSIS & DESIGN I (3)

**ISE430 - MANUF SYS & FACILITIES DESIGN****Long Course Title**

MANUFACTURING SYSTEMS & FACILITIES DESIGN

**Course Description**

Modern manufacturing systems design with emphasis on facility location and plant layout. Includes classical systems, just-in-time systems, principles of integrated manufacturing systems design, and an analysis of process flow and productivity, and available space to determine facility layout.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - ISE324 - WORK DESIGN (3)
  - MAE378 - MATERIALS & MFG PROCESS (3)

**Cross-Listed Course**

ISE530 - MANUF SYS & FACILITIES DESIGN

**ISE433 - PROD & INVENTORY CONTROL SYS****Long Course Title**

PRODUCTION & INVENTORY CONTROL SYSTEMS

**Course Description**

Inventory models including classical optimal economic order quantity models, manufacturing resource planning systems, production scheduling, material requirements, and purchase order control. Emphasis on manufacturing system revisions, continuous process improvement, and implementation of lean principles.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE390 - PROB & ENGR STATISTICS I (3)

**Cross-Listed Course**

ISE533 - PRODUCTION/INVENTORY CONTR SYS



**ISE436 - INTRO TO ADDITIVE MFG****Long Course Title**

INTRODUCTION TO ADDITIVE MANUFACTURING

**Course Description**

Overview course on additive manufacturing technologies, including 3D printing, prototyping, powder deposition, powder spraying, laminate materials manufacturing, ultrasonic consolidation, and other topics. Focus on design for manufacturing.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CE211 - CIVIL ENGINEERING GRAPHICS (2)
  - MAE211 - INTRO COMPUTATIONAL TOOLS (2)

**ISE439 - SELECTED TOPICS/ISE****Credits**

1 - 3

**Cross-Listed Course**

ISE539 - SELECTED TOPICS/ISE

**ISE447 - INTRO TO SYSTEMS SIMULATION****Long Course Title**

INTRODUCTION TO SYSTEMS SIMULATION

**Course Description**

Philosophy and elements of digital, discrete-event simulation. Emphasis on modeling and analysis of stochastic systems, including probabilistic models, output analysis, and the use of simulation software. (Same as ISE 547)

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - ISE391 - PROB/ENGR STAT II (3)

**Cross-Listed Course**

ISE547 - INTRO TO SYSTEMS SIMULATION

**ISE480 - SYSTEMS ENGINEERING MODELING****Long Course Title**

SYSTEMS ENGINEERING MODELING

**Course Description**

The main goal of this course is to teach the student Model Based Systems Engineering (MBSE) fundamentals with application to real-world systems engineering problems. Students will learn (1) core systems engineering concepts and processes; (2) System Modeling Language (SysML) fundamentals and its use to develop and execute system models on a SysML based tool and (3) Architecture and physical model execution, simulation and integration.

**Credits**

3

**Prerequisites**

- Must have a class standing of Senior

**Cross-Listed Course**

ISE580 - SYSTEMS ENGINEERING MODELING

**ISE502 - INDUSTRIAL & ORGANIZA PSY****Course Description**

Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems.

**Credits**

3

**Equivalent Course(s)**

PY502 - INDUSTRIAL & ORGANIZA PSY

**Cross-Listed Course**

ISE402 - INDUSTRIAL & ORGANIZA PSY

**ISE503 - HUMAN FACTORS PSYCHOLOGY****Long Course Title**

HUMAN FACTORS PSYCHOLOGY

**Course Description**

Study of human performance in human-technology-environment systems. Consideration of human capabilities and limitations as related to controls and displays, and the role of human cognition in decision-making and training effectiveness.

**Credits**

3

**Equivalent Course(s)**

PY503 - HUMAN FACTORS PSYCHOLOGY

**Cross-Listed Course**

ISE403 - HUMAN FACTORS PSYCHOLOGY

**ISE521 - IMPROVING HEALTHCARE SYSTEMS****Long Course Title**

IMPROVING HEALTHCARE SYSTEMS

**Course Description**

Overview of healthcare systems with emphasis on departments, functions, and improving operational performance. Lean concepts and techniques are introduced as they specifically apply in a healthcare environment. Topics include workplace organization, patient and material flow, pull systems, value stream mapping, problem solving, and root cause analysis. Hands on simulations will be utilized.

**Credits**

3

**ISE522 - HEALTHCARE SYSTEMS ENGINEERING****Long Course Title**

HEALTHCARE SYSTEMS ENGINEERING

**Course Description**

This course introduces students to systematic and quantitative analysis of healthcare systems. The purpose of this class is to increase the student's understanding of how to apply proven industrial and systems engineering methods to healthcare related problems. Potential topics include: healthcare financing, health analytics, six sigma as they relate to healthcare, reliability and patient safety, capacity management, and healthcare logistics.

**Credits**

3

**Cross-Listed Course**

ISE422 - HEALTHCARE SYST ENGR

**ISE523 - INTR STATISTICAL QUALITY CONTR****Course Description**

This course introduces statistical theory and techniques to control quality of manufacturing products. This course will provide a solid foundation in Statistical Quality Control (SQC). The Six Sigma methodology is also introduced in this course. Students can take the certification exam to earn a Green Belt in Six Sigma.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)

**Cross-Listed Course**

ISE423 - INTR STATISTICAL QUALITY CONTR

## **ISE526 - DESIGN/ANALY OF EXPERIMENT**

### **Course Description**

Advanced topics in statistical experiments with emphasis on design aspect. Confounding, fractional replication, factorial and nested design.

### **Credits**

3

### **Cross-Listed Course**

ISE426 - DSGN & ANALY OF EXPERIM

## **ISE530 - MANUF SYS & FACILITIES DESIGN**

### **Course Description**

Overview of modern manufacturing systems design with emphasis on facility location and plant layout. Includes classical systems, just-in-time systems, basic principles of integrated manufacturing systems design, as well as analysis of process flow, process productivity, and available space to determine plant layout. Includes laboratory exercises.

### **Credits**

3

### **Cross-Listed Course**

ISE430 - MANUF SYS & FACILITIES DESIGN

## **ISE533 - PRODUCTION/INVENTORY CONTR SYS**

### **Long Course Title**

PRODUCTION/INVENTORY CONTROL SYSTEMS

### **Course Description**

Inventory models including classical optimal economic order quantity models, manufacturing resource planning (MRP) systems, master production scheduling, material requirements planning, and purchase order control. Emphasis on manufacturing system revision, continuous process improvement, and the implementation of lean principles.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)

### **Cross-Listed Course**

ISE433 - PROD & INVENTORY CONTROL SYS

## **ISE539 - SELECTED TOPICS/ISE**

### **Credits**

1 - 3

### **Cross-Listed Course**

ISE439 - SELECTED TOPICS/ISE

## **ISE547 - INTRO TO SYSTEMS SIMULATION**

### **Course Description**

Philosophy and elements of digital discrete-event simulation. Emphasis on modeling and analysis of stochastic systems, including probabilistic models, output analysis, and use of simulation software.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)

### **Cross-Listed Course**

ISE447 - INTRO TO SYSTEMS SIMULATION

## **ISE580 - SYSTEMS ENGINEERING MODELING**

### **Long Course Title**

SYSTEMS ENGINEERING MODELING

### **Course Description**

The main goal of this course is to teach the student Model Based Systems Engineering (MBSE) fundamentals with application to real-world systems engineering problems. Students will learn (1) core systems engineering concepts and processes; (2) System Modeling Language (SysML) fundamentals and its use to develop and execute system models on a SysML based tool and (3) Architecture and physical model execution, simulation and integration.

### **Credits**

3

## **ISE623 - ENGR ECON ANALYSIS**

### **Long Course Title**

ENGINEERING ECONOMIC ANALYSIS

### **Course Description**

This course is designed for graduate students in industrial engineering, systems engineering and engineering management. This course involves mathematical models for expenditure analysis under uncertainty; investment decision criteria; capital planning and budgeting; and decisions involving expansion, acquisitions, replacement, and disinvestment.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)

**ISE626 - INTRO OPERATIONS RESEARCH****Long Course Title**

INTRODUCTION TO OPERATIONS RESEARCH

**Course Description**

Philosophy and methodology of operations research. Includes linear programming, game theory, sequencing, and networks.

**Credits**

3

**ISE627 - ENGINEERING SYSTEMS****Course Description**

Development of a systems-scientific framework for the integration of systems theory, systems thinking, systems engineering, and systems management. Emphasis is on the conception, design, and management of systems to accommodate complex environments.

**Credits**

3

**ISE628 - REQUIREMENTS ENGINEERING****Course Description**

Requirements Engineering is the backbone of the Systems Engineering Process. It begins in the Elicitation & early Concept Development phase and proceeds through Product Validation. This course will focus on the requirements engineering activities performed at each phase of the design & development life cycle. Today's Requirements Engineering effort is often a blend of a document centric and Model Based Systems Engineering (MBSE). This course will focus on capturing the best practices of the document centric process model and combining them with best practices from the MBSE process model. The course is structured to be highly interactive. Access to the ISEEM computer lab or equivalent will be necessary since students will be applying lessons learned during the conduct of the course.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE580 - SYSTEMS ENGINEERING MODELING (3)
  - ISE627 - ENGINEERING SYSTEMS (3)

**Charger Foundations**

N/A

**ISE629 - OPTIMIZ AEROSPACE SYST DSGN****Long Course Title**

OPTIMIZATION IN AEROSPACE SYSTEMS DESIGN

**Course Description**

in this project course, students will learn to model an aerospace system they are designing and optimize the system using the model. Linear, nonlinear, and discrete optimization are addressed. This course is targeted to students in systems engineering and aerospace systems engineering.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - ISE627 - ENGINEERING SYSTEMS (3)

**ISE638 - ENGINEERING RELIABILITY****Course Description**

Methodology of reliability prediction including application of discrete and continuous distribution models. Reliability estimation, reliability logic diagrams, life testing, and reliability demonstrations.

**Credits**

3

**ISE639 - SELECTED TOPICS/ISE****Credits**

1 - 6

**ISE641 - ADVANCED QUALITY CONTROL****Course Description**

This capstone course uses advanced statistical quality tools such as autocorrelated data, multi-variate quality controls charts, response surface methodology, ridge analysis, and evolutionary operations (EVOP). Advanced Six Sigma concepts will be taught and students will have the opportunity to earn a Black Belt in Six Sigma upon successful completion of the certification exam and an acceptable project.

**Credits**

3

**ISE690 - STATISTICAL METHODS FOR ENGR****Course Description**

Application of statistics for estimation and inference using parametric and nonparametric methods. Descriptive statistics, sampling distributions, point and interval estimates, tests of hypotheses, ANOVA, and linear regression.

**Credits**

3

**ISE696 - GRAD INTERN ISE ENGR****Course Description**

Active involvement in an engineering project in an engineering enterprise, professional organization, or government agency that has particular interest and relevance to the graduate student. Permission of ISE faculty member required.

**Credits**

1 - 9

**ISE697 - INDUS & SYSTEMS ENGR PROJECT I****Long Course Title**

INDUSTRIAL & SYSTEMS ENGINEERING PROJECT I

**Course Description**

Application oriented student project designed to show competence in Industrial and Systems Engineering.

**Credits**

3 - 9

**ISE699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for M.S.E. students. A maximum of 9 hours of credit is awarded upon successful completion of master's thesis. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

**ISE726 - SYSTEMS MODELING****Long Course Title**

SYSTEMS MODELING

**Course Description**

The capstone course for the operations research option studies the philosophy and methodology for modeling probabilistic systems. Includes Markov processes, queueing theory, and inventory theory. Team project required.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ISE690 - STATISTICAL METHODS FOR ENGR (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ISE626 - INTRO OPERATIONS RESEARCH (3)
    - ISE627 - ENGINEERING SYSTEMS (3)



**ISE734 - DECISION ANALYSIS****Course Description**

Decision making for systems engineering and engineering management, with an emphasis on applications to complex systems. Builds a rigorous foundation in decision making under uncertainty using expected utility theory. Topics include decision trees, value models, predictive models, preferences and bias.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)

**ISE739 - SELECTED TOPICS/ISE****Credits**

1 - 6

**ISE761 - EVOL THRY ENG MGMT/IND SYS ENG****Course Description**

Development of applicable engineering management or industrial and systems engineering theory using classical concepts, contemporary studies and practices at successful technology-based organizations.

**Credits**

3

**Equivalent Course(s)**

EM761 - EVOL THRY ENG MGMT/IND SYS ENG

**ISE790 - ADV STATISTICAL APPLICATIONS****Long Course Title**

ADVANCED STATISTICAL APPLICATIONS

**Course Description**

Continuation of ISE 690 with extension to regression models and nonparametric methods.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)

**ISE799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is working and receiving direction on a doctoral dissertation. The 0 hour option is only available to students who have successfully defended their dissertation and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

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## Information Systems

**IS146 - COMPUTER APPL IN BUSINESS****Long Course Title**

COMPUTER APPLICATIONS IN BUSINESS

**Course Description**

Study of computer solutions to business problems. Overview of hardware/software systems and of data and information processing in organizations. Extensive use of Microsoft Office and other software for word processing, spreadsheet, presentation, and database applications related to business.

**Credits**

3

**IS210 - INTRO COMP PROG IN BUS****Long Course Title**

INTRO TO COMPUTER PROGRAMMING IN BUSINESS

**Course Description**

Fundamentals of business programming using languages such as Python, PHP, JavaScript, JQuery and HTML5.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS146 - COMPUTER APPL IN BUSINESS (3)

## **IS301 - INFO SYSTEMS IN ORGANIZATIONS**

### **Long Course Title**

INFORMATION SYSTEMS IN ORGANIZATIONS

### **Course Description**

Understanding the role of information systems in organizations and how they relate to organizational objectives and organizational structure. Introduce information system applications and the SAP software to illustrate the concepts covered in this course.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS146 - COMPUTER APPL IN BUSINESS (3)

## **IS310 - ADVANCED PROGRAMMING**

### **Long Course Title**

ADVANCED PROGRAMMING

### **Course Description**

This second level programming course introduces advanced programming concepts with more complex I/O, file and data handling, object oriented programming, testing and quality and maintenance. The course focuses on developing solutions for business problems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS210 - INTRO COMP PROG IN BUS (3)

## **IS340 - DATABASE MANAGEMENT**

### **Course Description**

Organizing and managing the data resources of an organization using information technology. The course covers modeling and design of databases for organizations. It will also cover query, reporting and visualization of data for supporting decision-making by managers. Students will be introduced to the technologies that support business analytics and basics of analytics..

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

## **IS351 - ENT & SUPPLY CHAIN MGT SYSTS**

### **Long Course Title**

ENTERPRISE AND SUPPLY CHAIN MANAGEMENT SYSTEMS

### **Course Description**

This course emphasizes the importance of integration of processes within an enterprises and across enterprises in a supply chain and the systems used to support these processes. Enterprise systems support the internal logistics chain within a firm integrating processes across all functions. Students will learn about the digital transformation taking place within the firm and across the firm's supply chain. The course will introduce students to processes and systems that firms use to harness the capabilities of their supply chain partners and supply networks.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

## **IS401 - CYBERSECURITY PRINCIPLES**

### **Course Description**

Provides a managerial and technical overview of cybersecurity and introduces students to the complexity of the security issues facing organizations. Presents practices and standards for assessing security risks and managerial and technical approaches to minimize such risks.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

### **Cross-Listed Course**

IS501 - CYBERSECURITY PRINCIPLES

**IS412 - SYSTEMS ANALYSIS & DESIGN****Long Course Title**

SYSTEMS ANALYSIS & DESIGN

**Course Description**

Identifying, analyzing, developing and acquiring information systems are central to the information systems discipline. The course covers identifying, conceptualizing and analyzing business opportunities where information systems applications can add value followed by design, development, and implementation of such applications. Planning for and management of this core IS activity is a critical organizational competence.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - IS310 - ADVANCED PROGRAMMING (3)
  - IS340 - DATABASE MANAGEMENT (3)

**Equivalent Course(s)**

IS512 - SYSTEMS ANALYSIS & DESIGN

**IS422 - SUPPLY CHAIN MANAGEMENT SYSTEM****Long Course Title**

SUPPLY CHAIN MANAGEMENT SYSTEM

**Course Description**

This course presents the main concepts of supply chain management systems and software including ERP, CRM and SCM systems as well as the underlying technologies and managerial implications. It provides hands-on familiarity with SAP supply chain modules.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

## **IS450 - CYBERSECURITY MANAGEMENT**

### **Course Description**

Examines management issues associated with cybersecurity system planning, implementation, control and assurance. Specific emphasis is on security system controls and their evaluation, compliance, governance, security policies, ethical and legal issues, and risk management. Recent developments in IT, such as client-server systems, cloud computing and the Internet, and their impact on policies, laws are also considered.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

### **Cross-Listed Course**

IS550 - CYBERSECURITY MANAGEMENT

## **IS460 - NETWORKING & IT INFRASTRUCTURE**

### **Course Description**

An overview of the IT infrastructure in modern organizations. The course starts from basic networking concepts to digital platforms and ecosystems in the market.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

### **Cross-Listed Course**

IS560 - NETWORKING & IT INFRASTRUCTURE

## **IS463 - DIGITAL FORENSICS**

### **Course Description**

Provides an introduction to the area of digital forensics. Examines the problems and concerns related to Cybersecurity forensic investigations. Blends traditional investigation methods with classic systems-analysis problem-solving techniques and applies them to computing investigations. This course is lab intensive and students are expected to gain hands-on experience through learning to use various forensic software. Several information security topics nonspecific to forensics will also be covered.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS401 - CYBERSECURITY PRINCIPLES (3)

## **IS471 - BUSINESS ANALYTICS & AI**

### **Course Description**

The course covers the use of data analytics to support decision-making in organizations and gain insights to support tactics and strategy. In addition to analytics, students will also be introduced to Artificial Intelligence (AI) techniques for analytics. Students will use many business analytics tools and gain experience in mining data. The course is designed to develop data-analytic thinking in the era of big data.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - IS310 - ADVANCED PROGRAMMING (3)
  - MSC288 - BUSINESS STATISTICS II (3)

### **Cross-Listed Course**

IS571 - BUSINESS ANALYTICS & AI

## **IS477 - NETWORK DEFENSE & SECURITY**

### **Long Course Title**

NETWORK DEFENSE & SECURITY

### **Course Description**

Introduction to network security issues and practical applications. Addresses translation, packet filtering, proxy servers, and firewalls, and Virtual Private Networks. This course assumes familiarity with internet and basic networking concepts such as TCP/IP, gateways, routers, and Ethernet.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS401 - CYBERSECURITY PRINCIPLES (3)
  - IS460 - NETWORKING & IT INFRASTRUCTURE (3)

### **Cross-Listed Course**

IS577 - NETWORK DEFENSE & SECURITY

## **IS480 - CURRENT TOPICS IN MGT INFO SYS**

### **Long Course Title**

CURRENT TOPICS IN MANAGEMENT INFORMATION SYSTEMS

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)

### **Cross-Listed Course**

IS580 - SEMINAR IN MGT INFO SYSTEMS

## **IS490 - SPECIAL PROJECTS**

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Senior

## **IS491 - IS MANAGEMENT & STRATEGY**

### **Long Course Title**

INFORMATION SYSTEMS MANAGEMENT & STRATEGY

### **Course Description**

This course emphasizes the integration of various principles, theories, and techniques for implementing, deploying and managing enterprise information systems in organizations to gain strategic and operational advantages. Includes lectures, tours, readings, cases, and the completion of a major project. Normally taken during a student's last semester of studies.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - IS340 - DATABASE MANAGEMENT (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - IS351 - ENT & SUPPLY CHAIN MGT SYSTS (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - IS412 - SYSTEMS ANALYSIS & DESIGN (3)

## **IS495 - INTERN IN INFO SYSTEMS**

### **Long Course Title**

INTERNSHIP IN INFORMATION SYSTEMS

### **Credits**

1 - 3

### **Prerequisites**

- Must have a class standing of Senior



## **IS501 - CYBERSECURITY PRINCIPLES**

### **Course Description**

This course is designed to provide a general overview of the concepts of information security to students, both from a management and a technology perspective. Students will be introduced to the complexity of the security issues facing today's networked organizations. Practices and standards will be presented to assess and plan for risks and the security needs to minimize the risks both technically and managerially. The integration of security concerns within the entire organizational planning and implementation processes and practices will be explored.

### **Credits**

3

### **Cross-Listed Course**

IS401 - CYBERSECURITY PRINCIPLES

## **IS512 - SYSTEMS ANALYSIS & DESIGN**

### **Long Course Title**

SYSTEMS ANALYSIS & DESIGN

### **Course Description**

Identifying, analyzing, developing and acquiring information systems are central to the information systems discipline. The course has to do with identifying, conceptualizing and analyzing business opportunities where information systems applications can add value followed by design, development, and implementation of such applications. Planning for and management of this core IS activity is a critical organizational competence.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - IS601 - MANAGEMENT OF INFORMATION TECH (3)

### **Cross-Listed Course**

IS412 - SYSTEMS ANALYSIS & DESIGN

## **IS520 - WEB PORTALS & APPLICATIONS**

### **Course Description**

This course bridges the boundary between consumer of Web applications and the ability of enterprises to derive value from web technologies and platforms by developing portals that integrate disparate organizational silos and databases. The course explores concepts in digital content and communication, technology infrastructure and social media. Utilization of SAP tools to develop an enterprise portal front end to organizations' back-end business systems.

### **Credits**

3

**IS522 - SUPPLY CHAIN MANAGEMENT SYS****Long Course Title**

SUPPLY CHAIN MANAGEMENT SYSTEMS

**Course Description**

This course presents the main concepts of supply chain management systems and software including ERP, CRM, and SCM systems as well as the underlying technologies and managerial implications. It provides hands-on familiarity with SAP supply chain modules.

**Credits**

3

**Cross-Listed Course**

IS422 - SUPPLY CHAIN MANAGEMENT SYSTEM

**IS540 - WEB PROG & DATABASE INTEGRATIO****Long Course Title**

WEB PROGRAMMING AND DATABASE INTEGRATION

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Student must be in College of Business
  - Earn a minimum grade of C- in all of the following:
    - IS520 - WEB PORTALS & APPLICATIONS (3)

**IS550 - CYBERSECURITY MANAGEMENT****Course Description**

Examines the management issues associated with the control and audit of information systems. Specific emphasis is on IT controls and their evaluation, computer-based auditing techniques, encryption, and security policies. Recent developments in IT, such as client-server systems and the internet and their impact on auditing control, and security, are also considered.

**Credits**

3

**Cross-Listed Course**

IS450 - CYBERSECURITY MANAGEMENT

**IS560 - NETWORKING & IT INFRASTRUCTURE****Course Description**

An overview of the IT infrastructure in modern organizations. The course starts from basic networking concepts to digital platforms and ecosystems in the market.

**Credits**

3

**Cross-Listed Course**

IS460 - NETWORKING & IT INFRASTRUCTURE

**IS571 - BUSINESS ANALYTICS & AI****Long Course Title**

BUSINESS ANALYTICS & ARTIFICIAL INTELLIGENCE (AI)

**Course Description**

The course covers the use of data analytics to support decision-making in organizations and gain insights to support tactics and strategy. In addition to analytics, students will also be introduced to Artificial Intelligence (AI) techniques for analytics. Students will use many business analytics tools and gain experience in mining data. The course is designed to develop data-analytic thinking in the era of big data.

**Credits**

3

**Cross-Listed Course**

IS471 - BUSINESS ANALYTICS & AI

**IS577 - NETWORK DEFENSE & SECURITY****Course Description**

Provides an introduction to the area of network security. Addresses security issues and practical applications related to Network Address Translation, packet filtering, proxy servers and firewalls, and Virtual Private Networks. This course assumes familiarity with the internet and basic networking concepts such as TCP/IP, gateways, routers, and Ethernet.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - IS560 - NETWORKING & IT INFRASTRUCTURE (3)

**Cross-Listed Course**

IS477 - NETWORK DEFENSE & SECURITY

**IS580 - SEMINAR IN MGT INFO SYSTEMS****Long Course Title**

SEMINAR IN MANAGEMENT INFORMATION SYSTEMS

**Course Description**

Selected topics in Management Information Systems. Topics will reflect the contemporary issues and current technological advancements which impact the development, implementation and management of effective information systems in organizations.

**Credits**

3

**Cross-Listed Course**

IS480 - CURRENT TOPICS IN MGT INFO SYS

**IS595 - INTERNSHIP INFORMATION SYSTEMS****Course Description**

Under the direction of a faculty advisor, student gains experience with information systems and technology professionals in industry.

**Credits**

1 - 3

**IS600 - INFORMATION SYSTEMS MANAGEMENT****Course Description**

Develops an understanding of how information technology (IT) can enable organizations to conduct business more effectively in a rapidly changing business environment. Includes strategies to manage and leverage the organization's IT capabilities to deploy digital business models and maintain efficient and profitable business operations. Students will use systems and business process thinking to create and analyze strategies for technology enabled organizational transformation. Students will also use enterprise systems like SAP and other technologies as part of the course to understand their integrative capabilities to meet the information needs of an organization.

**Credits**

3

**IS601 - MANAGEMENT OF INFORMATION TECH****Long Course Title**

MANAGEMENT OF INFORMATION TECHNOLOGY

**Course Description**

This course is designed to provide an understanding of how information technology (IT) can enable organizations to conduct business more effectively in a rapidly changing business environment and to leverage the organization's IT capabilities to maintain efficient and profitable business operations.

**Credits**

3

**IS640 - DATA MGT AND DATA MINING****Long Course Title**

DATA MANAGEMENT AND DATA MINING

**Course Description**

Explores the theories, features, and capabilities of relational database management systems in a business environment. Examines how to read and interpret database design documents and how to query database driven business applications. Emphasizes the use of database management systems and data mining tools in real-world business settings and how these technologies can be applied effectively to solve business problems.

**Credits**

3

## **IS650 - SELECTED RESEARCH TOPICS**

### **Course Description**

Research in a particular topic relevant to management information systems by one student or a group of students. Each student's research paper must be an original contribution showing a research design and results that meet the highest standard of management information systems research.

### **Credits**

3

## **IS660 - CYBERSECURITY MANAGEMENT**

### **Long Course Title**

CYBERSECURITY MANAGEMENT

### **Course Description**

Examines the management issues associated with the control and audit of information systems. Specific emphasis is on IT controls and their evaluation, computer-based auditing techniques, encryption, and security policies. Recent developments in IT, such as client-server systems and the internet and their impact on auditing control, and security, are also considered.

### **Credits**

3

## **IS663 - COMPUTER FORENSICS**

### **Long Course Title**

COMPUTER FORENSICS

### **Course Description**

This course covers most of the important topics in computer forensics. It examines the problems and concerns related to computer investigations. It introduces systematical problem-solving techniques and applies them to computing investigations. It implements a variety of computer forensic tools in real-life scenarios.

### **Credits**

3

## **IS670 - BUSINESS CONTINGENCY PLANNING**

### **Long Course Title**

BUSINESS CONTINGENCY PLANNING

### **Course Description**

Introduces the theories and concepts of business contingency planning through risk analysis and disaster recovery planning. This course is designed to provide a greater understanding of the assessment and management of risk and disaster recovery within the organization. The course will emphasize the nature of risk, risk assessment, risk management, and disaster recovery and how these concepts can be addressed effectively through business contingency planning.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - IS601 - MANAGEMENT OF INFORMATION TECH (3)

## **IS680 - ENTERPRISE RESOURCE PLNG SYS**

### **Long Course Title**

ENTERPRISE RESOURCE PLANNING SYSTEMS

### **Course Description**

This course examines the concepts, design, configuration and implementation of enterprise resource planning (ERP) systems with a view to integrate all aspects of an organization into one information system. Specific attention is given as to how ERP systems facilitate the flow of information supporting core business processes and the organization's supply chain. The course will emphasize the SAP configuration and strategic use of ERP systems to support the organizational structures and business processes of the particular company to efficiently and effectively manage a firm's business. Extensive use of SAP software is made in illustrating the configuration, implementation, and use of ERP systems in business and governmental organizations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - IS601 - MANAGEMENT OF INFORMATION TECH (3)

## **IS691 - INFORMATION SYS STRATEGY & APP**

### **Long Course Title**

INFORMATION SYSTEMS STRATEGY & APPLICATIONS

### **Course Description**

This capstone course emphasizes the integration of various principles, theories, and techniques for developing, implementing and using information systems strategies and applications in organizations. It aims at providing a holistic view of Information Systems and Technology (IS/T) function in an organization with a view to serve an organization's mission and strategy throughout the value and supply chain. These skills will be placed in the context of business processes where they will be applied. Thus, in this course we will explore ways and means to help executives and managers make better decisions in the manufacturing and service sectors through a strategic use of IS/T. Normally taken during student's last semester. Must be completed with a grade of B or better.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - IS512 - SYSTEMS ANALYSIS & DESIGN (3)
  - IS560 - NETWORKING & IT INFRASTRUCTURE (3)
  - IS571 - BUSINESS ANALYTICS & AI (3)
  - IS640 - DATA MGT AND DATA MINING (3)
  - IS680 - ENTERPRISE RESOURCE PLNG SYS (3)

## **IS692 - CYBERSECURITY PRACTICUM**

### **Long Course Title**

CYBERSECURITY PRACTICUM

### **Course Description**

A capstone course emphasizing the integration of various principles, theories, and techniques for developing, implementing and using cybersecurity tools and strategies and applications in organizations. Includes readings, lectures, situation analysis, cases, and the completion of a major practical project. Must be completed with a grade of B or better.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - IS501 - CYBERSECURITY PRINCIPLES (3)
    - CS585 - INTRO CYBERSECURITY ENGR (3)
    - CPE549 - INTRO TO CYBERSECURITY ENGINEERING (3)
  - Earn a minimum grade of C- in at least 2 of the following:
    - IS550 - CYBERSECURITY MANAGEMENT (3)
    - IS660 - CYBERSECURITY MANAGEMENT (3)
  - Earn a minimum grade of C- in all of the following:
    - IS663 - COMPUTER FORENSICS (3)
  - Admitted to: MS CBSB, MS CBSE, or MS CBSS

## **IS699 - MASTER'S THESIS**

### **Course Description**

Required each semester a student is working and receiving direction on a masters thesis. A minimum of two terms is required but no more than six hours credit is allowed for the thesis. Credit awarded upon successful completion of thesis.

### **Credits**

3

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## **Intensive Language & Culture**

### **ILC010 - INT LANG & CULT I**

#### **Course Description**

Course designed to improve nonnative speaker's ability in their overall language proficiency at the high beginning level.

#### **Credits**

4 - 20

**ILC020 - INT LANG & CULT II****Course Description**

Course designed to improve nonnative speaker's ability in their overall language proficiency at the low intermediate level.

**Credits**

4 - 20

**ILC030 - INT LANG & CULT III****Course Description**

Course designed to improve nonnative speaker's ability in their overall language proficiency at the intermediate level

**Credits**

4 - 20

**ILC040 - INT LANG & CULT IV****Long Course Title**

INTERMEDIATE LANGUAGE & CULTURE IV

**Course Description**

Course designed to improve nonnative speaker's ability in their overall language proficiency at the high intermediate level.

**Credits**

4 - 20

**ILC050 - INT LANG & CULT V****Course Description**

Course designed to improve nonnative speaker's ability in their overall language proficiency at the advanced level.

**Credits**

4 - 20

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## Kinesiology

**KIN200 - CONTEMPORARY NUTRITION****Course Description**

Introduction to the principles of nutrition as they relate to the growth, development, and maintenance of the human body throughout the lifespan. Emphasis is placed on the classes of nutrients, weight management, and nutritional planning.

**Credits**

3



**KIN205 - FIRST AID & CPR****Course Description**

Students will focus on recognizing emergency situations. First Aid and CPR also provides skills and knowledge necessary in caring for injuries or sudden illness.

**Credits**

1

**KIN210 - ATHLC INJURY PREVENTION & CARE****Long Course Title**

ATHLETIC INJURY, PREVENTION, AND CARE

**Course Description**

Presents the knowledge and techniques necessary to prevent and/or care for common athletic injuries. For coaches, athletes, and those working in recreation, physical education, or athletics.

**Credits**

3

**KIN215 - FIRST RESPONDER/PROFESSN'L CPR****Long Course Title**

FIRST RESPONDER AND PROFESSIONAL CPR

**Course Description**

Learn the concepts and skills needed to function as a First Responder and Professional Rescuer. Emphasis is placed on preparing for, recognizing, and providing emergency care in various situations where needed. Additionally, this course fully addresses the objectives in the U.S. Department of Transportation's National Standards Curriculum.

**Credits**

2

**KIN240 - HEALTH & WELLNESS CONCEPTS****Long Course Title**

HEALTH AND WELLNESS CONCEPTS

**Course Description**

This course provides students with an overview of individual and societal health and wellness and the impact of lifestyle choices. Laboratory experiences provide opportunity for assessment of individual health and fitness behaviors. Topics covered include: wellness, physical fitness, behavior modification, weight management, stress management, disease prevention, addictive behavior and sexual health.

**Credits**

3

**KIN250 - ESSENTIALS OF PERSONAL TRAIN'G****Long Course Title**

ESSENTIALS OF PERSONAL TRAINING

**Course Description**

This course is designed to provide theoretical knowledge and practical skills in preparation for a national certification exam in personal training. Topics include guidelines for instructing safe, effective, and purposeful exercise, essentials of the client-trainer relationship, conducting health and fitness assessments, and designing and implementing appropriate exercise programming.

**Credits**

2

**KIN260 - FOUNDATIONS OF KINESIOLOGY****Course Description**

An introductory course for students in the Kinesiology major. The course will provide an overview of the Kinesiology field, including all subdisciplines and an in-depth discussion of teacher v non-teacher career choices. The history and development of physical education, exercise science, and sport studies will be covered, as well as issues and trends in physical education, exercise science, and sport studies.

**Credits**

3

**KIN265 - INTRO TO SPORT MGMT****Long Course Title**

INTRODUCTION TO SPORT MANAGEMENT

**Course Description**

This 3 hour course provides the student with the knowledge of sport management and administration in both athletics and leisure-based sports. Topics include management concepts, roles and responsibilities, fiscal management, fundraising, legal issues, event scheduling, and decision making.

**Credits**

3

**Equivalent Course(s)**

SFM265 - INTRO TO SPORT MGMT

**KIN290 - EX TECHNIQUES & LEADERSHIP****Long Course Title**

EXERCISE TECHNIQUES AND LEADERSHIP

**Course Description**

This course provides a practical guide in leadership for group and individual exercise settings. Critical evaluation of a safe fitness environment, adult physical activity programs to promote health, and exercise techniques according to the American College of Sports Medicine and National Strength and Conditioning Association are included.

**Credits**

3

## **KIN300 - NUTRITION FOR FITNESS & SPORT**

### **Long Course Title**

NUTRITION FOR FITNESS AND SPORT

### **Course Description**

Explores the theoretical and applied nutritional sciences as they relate to fitness and sport. Students will develop practical skills applicable to solving nutritional problems in exercising populations. Nutritional requirements and practices related to general fitness, athletic performance, and special needs individuals will also be covered.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN200 - CONTEMPORARY NUTRITION (3)

## **KIN327 - EXERCISE PHYSIOLOGY**

### **Long Course Title**

INTRODUCTION TO EXERCISE PHYSIOLOGY

### **Course Description**

An introduction to the response and adaptations of the body systems to exercise and physical activity.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
    - KIN290 - EX TECHNIQUES & LEADERSHIP (3)
  - Earn a minimum grade of C- in all of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)

### **Corequisites**

- Concurrently enrolled in:
  - KIN328 - EXERCISE PHYSIOLOGY (1)

**KIN328 - EXERCISE PHYSIOLOGY****Long Course Title**

EXERCISE PHYSIOLOGY LAB

**Course Description**

Exercise physiology lab experience to accompany the introduction to exercise physiology course lectures. The course meets two hours weekly for one credit hour.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - KIN327 - EXERCISE PHYSIOLOGY (3)

**KIN340 - SCHOOL AND COMMUNITY HEALTH****Long Course Title**

SCHOOL AND COMMUNITY HEALTH

**Course Description**

Obtain information and skills related to school and community health programs with an emphasis on health instruction, strategies, and resources. Survey the components of a school health program: school health services, healthful school environment, principles of physical and movement education, nutrition services, counseling and social services, parent/community involvement, health promotion for staff. Examine the core functions of public health, prevention of diseases and injuries, health needs of special populations, and functions of various organizations.

**Credits**

3

**KIN345 - PRINCIPLES OF COACHING****Course Description**

Gain knowledge and skills specific to coaching: developing a coaching philosophy and objectives, motivating athletes, managing a team. Emphasis is placed on sport at the high school and club level with consideration given to coaching youth, recreational, and intercollegiate. Coursework provides preparation for the American Sport Education Program (ASEP) Coaching Principles exam which is required by the Alabama High School Athletic Association (AHSAA).

**Credits**

3

**KIN351 - EXER TEST & PRECR HEALTHY POP****Long Course Title**

EXERCISE TESTING AND PRESCRIPTION FOR HEALTHY POPULATIONS

**Course Description**

Provides students with techniques that evaluate aerobic capacity, muscular strength and endurance, flexibility, and body composition. The development of exercise prescriptions based on evaluation results will be emphasized.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - KIN327 - EXERCISE PHYSIOLOGY (3)
  - Earn a minimum grade of D- in all of the following:
    - KIN328 - EXERCISE PHYSIOLOGY (1)

**KIN352 - EXER TEST & PRECR SPECIAL POP****Long Course Title**

TESTING AND PRESCRIPTION FOR SPECIAL POPULATIONS

**Course Description**

This advanced-level course integrates both lecture and laboratory to prepare students with the knowledge and skills necessary to conduct fitness evaluations, exercise prescriptions, and risk stratification of at-risk individuals. Specific emphasis will be placed on the administration of safe fitness testing using protocols published by ACSM for the health related components of physical fitness.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN351 - EXER TEST & PRECR HEALTHY POP (3)

**KIN361 - TEACHING TEAM SPORTS****Course Description**

Teaching methods and strategies of sports that require more than one participant. While knowledge of how to play the sport will be taught, emphasis will be placed on the organization, management, and assessment of skills in activities such as, but not limited to soccer, handball, and basketball.

**Credits**

3

**KIN362 - TEACHING INDIVIDUAL ACTIVITIES****Course Description**

Teaching methods and strategies for games involving individuals rather than a team. Emphasis will be placed on the organization, management, and assessment of skills in activities including, but not limited to, aerobic dance, cross country/trail running, and tumbling/gymnastics.

**Credits**

3

**KIN363 - TEACHING FITNESS & WELLNESS****Long Course Title**

TEACHING FITNESS AND WELLNESS

**Course Description**

Learn to perform and instruct a variety of fitness activities. Emphasis will be placed on performing fitness skills and on the methods and techniques for instructing and teaching specific fitness activities. Techniques for evaluating the knowledge and skills of the activities will also be stressed.

**Credits**

3

**KIN370 - ADAPTED PHYSICAL EDUCATION****Long Course Title**

ADAPTED PHYSICAL EDUCATION

**Course Description**

Develop knowledge of current concepts and trends in adapted physical education as well as the ability to plan and implement a physical education program designed to meet the unique needs of individuals.

**Credits**

3

**KIN371 - ADAPTED FITNESS****Long Course Title**

ADAPTED FITNESS

**Course Description**

Develop knowledge of current concepts and trends in adapted physical fitness as well as the ability to plan and implement fitness and wellness programs designed to meet the unique needs of individuals, particularly those with disabilities and special needs.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)

## **KIN375 - STRENGTH TRNG & CONDITION**

### **Long Course Title**

STRENGTH TRAINING AND CONDITIONING

### **Course Description**

This course provides a comprehensive overview of strength and athletic conditioning. Emphasis is placed on the exercise sciences (including anatomy, exercise physiology, and biomechanics) and exercise technique, program design, organization and administration, and testing and evaluation. Additionally, this course is designed to prepare students for the nationally accredited Certified Strength and Conditioning Specialist (CSCS) certification exam.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - KIN290 - EX TECHNIQUES & LEADERSHIP (3)
  - Earn a minimum grade of C- in all of the following:
    - KIN327 - EXERCISE PHYSIOLOGY (3)
    - KIN328 - EXERCISE PHYSIOLOGY (1)

## **KIN400 - NUTRITION IN HEALTH & DISEASE**

### **Long Course Title**

NUTRITION IN HEALTH AND DISEASE

### **Course Description**

This course will provide students an opportunity to examine the role of epigenetics in disease development, the impact of weight stigma on health and the makeup of a healthy relationship with food and exercise. Having knowledge on the complex components that make up a person's body shape and size will allow students to more accurately assess health status.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - KIN200 - CONTEMPORARY NUTRITION (3)

## **KIN401 - MENTAL HEALTH AND NUTRITION**

### **Long Course Title**

MENTAL HEALTH AND NUTRITION: THE BEHAVIORAL IMPACT OF STRESS AND MOOD STATES

### **Course Description**

This course prepares students to understand the foundational relationship between mental health and nutrition and its combined impact on human performance for elite athletes, competitive athletes, recreational athletes, or individuals engaged in physical activity and exercise who strive to improve overall health and fitness. The emphasis of this course includes malnutrition's impact on brain health; the three theories of a neurosequential treatment model including polyvagal theory, bottom-up processing, and neuroplasticity; the physiology of stress and its overall impact on health with specific emphasis on the gut/brain axis; the impact of cortisol on appetite hormones and athletic performance; diet culture stress and health-at-every-size approach for the active individual, and relative energy deficiency in sport (RED-S).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN300 - NUTRITION FOR FITNESS & SPORT (3)
  - KIN200 - CONTEMPORARY NUTRITION (3)

### **Charger Foundations**

No

## **KIN418 - STRUCTURE/FUNCTIONAL KIN**

### **Long Course Title**

STRUCTURAL AND FUNCTIONAL KINESIOLOGY

### **Course Description**

This course will provide development of knowledge of anatomic systems related to purposeful movement of the human body. Thorough instruction of the structure and function of musculoskeletal system will be provided.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
  - Complete 1 of the following
    - Must have a class standing of Junior
    - Must have a class standing of Senior



## **KIN419 - EXERCISE & SPORT BIOMECHANICS**

### **Long Course Title**

EXERCISE AND SPORT BIOMECHANICS

### **Course Description**

This course will provide an advanced understanding of biomechanical conditions of human movement as well as knowledge and skills needed to analyze and evaluate human motor performance in order to prescribe appropriate interventions for optimized application to rehabilitation and sports performance. Students will learn to appropriately represent kinematic and kinetic quantities as vectors and use vectors, vector addition, and vector resolution to enhance the understanding of basic mechanical concepts.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Complete 1 of the following
    - Must have a class standing of Junior
    - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - PH101 - GENERAL PHYSICS I (4)
    - KIN418 - STRUCTURE/FUNCTIONAL KIN (3)

### **Cross-Listed Course**

KIN519 - EXERCISE & SPORT BIOMECHANICS

## **KIN421 - INST APP TO SPORT PEDAGOGY**

### **Long Course Title**

INSTRUCTIONAL APPROACHES TO SPORT PEDAGOGY

### **Course Description**

This class is designed to expand and enrich the teaching repertoire. Special emphasis will be given to how selected models of teaching can be used to achieve multiple outcomes of teaching in physical education and other contexts (e.g., physical activity programs & youth sport). Additionally, the course will increase awareness in other instructional areas related to the profession (teaching underserved youth, youth sports programs, etc.).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - KIN361 - TEACHING TEAM SPORTS (3)
  - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
  - KIN363 - TEACHING FITNESS & WELLNESS (3)

**KIN428 - ENVIRONMENTAL EXERCISE PHYSIOL****Long Course Title**

ENVIRONMENTAL EXERCISE PHYSIOLOGY

**Course Description**

KIN 428 will examine how the human body responds and adapts to diverse forms of environmental stress during exercise. The course will focus on the responses and adaptations that occur from performing exercise under various environmental conditions.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN327 - EXERCISE PHYSIOLOGY (3)

**KIN450 - EXERCISE PHYSIOLOGY INTERNSHIP****Long Course Title**

EXERCISE PHYSIOLOGY INTERNSHIP

**Course Description**

Designed to provide on-site practical experience in a wellness/fitness program, physical therapy clinic, and/or a cardiac rehabilitation facility for Kinesiology-Exercise Science majors.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Admitted to: BS KIN
  - Earn a minimum grade of D- in all of the following:
    - KIN351 - EXER TEST & PRECR HEALTHY POP (3)

**Equivalent Course(s)**

KIN490 - EXERCISE SCIENCE INTERNSHIP

## **KIN451 - RESEARCH EXERCISE SCIENCE I**

### **Long Course Title**

RESEARCH IN EXERCISE SCIENCE I

### **Course Description**

Initial capstone course (part of a two-course sequence) providing a broad and balanced background in various types of research methods and the development of a research proposal. Development of a research question, hypothesis, and research methodology. Application of computers will be used to search databases for relevant literature. Completion of an Institutional Review Board application is required.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BS KIN
  - Earn a minimum grade of D- in all of the following:
    - KIN351 - EXER TEST & PRECR HEALTHY POP (3)

## **KIN452 - RESEARCH EXERCISE SCIENCE II**

### **Long Course Title**

RESEARCH IN EXERCISE SCIENCE II

### **Course Description**

Final capstone course (part of a two-course sequence) in which students must integrate and apply skills acquired throughout the program to complete a comprehensive research project. The student will complete the research project proposed in KIN 451 by recruiting research participants to collect data, writing the results and conclusions for a manuscript. Results will be prepared for publication and presented in a professional setting.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BS KIN
  - Earn a minimum grade of D- in all of the following:
    - KIN451 - RESEARCH EXERCISE SCIENCE I (3)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - PY300 - PSYCHOLOGICAL STATISTICS (3)

## **KIN455 - MOTOR LEARNING**

### **Long Course Title**

MOTOR LEARNING AND DEVELOPMENT

### **Course Description**

Study the principles and practices that affect the learning and development of motor skills; theories of motor learning, motor control, and development; lifespan motor development perspective related to performing motor and sport skills; and professional applications of motor learning and development in exercise science, athletic training, and physical education.

### **Credits**

3

## **KIN457 - MEASUREMENT & EVAL IN PHYS ACTV**

### **Long Course Title**

MEASUREMENT AND EVALUATION IN PHYSICAL ACTIVITY

### **Course Description**

Measure and evaluate learning or skill improvement based on accepted standards. Gain an understanding of the logic behind measurement instruments in order to better interpret and implement results and to achieve improved learning or physical fitness improvement. These methods of measurement and evaluation are important skills in health, physical education, and exercise science fields.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN351 - EXER TEST & PRECR HEALTHY POP (3)

## **KIN460 - SPECIAL TOPICS KINESIOLOGY I**

### **Long Course Title**

SPECIAL TOPICS KINESIOLOGY I

### **Course Description**

This course is intended to cover a variety of topics based on emerging topics in Kinesiology. Potential course offerings will include environmental exercise physiology, cardiovascular exercise physiology, childhood and adolescent exercise physiology, emerging topics in sport & fitness management, and expanded nutrition content.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BS KIN
  - Earn a minimum grade of D- in all of the following:
    - KIN327 - EXERCISE PHYSIOLOGY (3)

## **KIN461 - SPECIAL TOPICS KINESIOLOGY II**

### **Course Description**

This course is developed to cover a variety of topics based on emerging topics in Kinesiology. Potential course offerings will include environmental exercise physiology, cardiovascular exercise physiology, childhood and adolescent exercise physiology, emerging topics in sport & fitness management, and expanded nutrition content. Course content will be offered in rotation.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BS KIN
  - Earn a minimum grade of D- in all of the following:
    - KIN327 - EXERCISE PHYSIOLOGY (3)

**KIN462 - TEACHING PHYS ED IN ELEM SCH****Long Course Title**

METHODS OF TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS

**Course Description**

Physical education teacher candidates will acquire the ability to understand, recognize, analyze, and demonstrate the range of teaching skills employed by successful physical educators in the preschool and elementary setting. Emphasis is placed on understanding the theoretical implications of different teaching skills and the contexts in which they are effective. Teacher candidates will design lessons that allow for maximum student participation while remaining aligned with Alabama Consent Standards. Field experience is required. Candidates will observe, participate in, and teach lessons in physical education classrooms.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - KIN370 - ADAPTED PHYSICAL EDUCATION (3)
  - Admission to the Teacher Education Program Required

**KIN463 - PSYCHOLOGICAL ASPECTS SPORT****Long Course Title**

PSYCHOLOGICAL ASPECTS OF SPORT

**Course Description**

Provides students with an introductory experience in sport, exercise, and fitness psychology based on the latest research and practice. Practical examples and case studies for individual and group sports are provided. The aim is to bridge science and practice to teach students the role of a sport and fitness psychologist.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Must have a class standing of Junior
  - Must have a class standing of Senior

**KIN464 - HEALTH/PE FOR ELEM TEACHERS****Long Course Title**

HEALTH AND PE FOR THE ELEMENTARY TEACHER

**Course Description**

The purpose of this course is to help the future elementary classroom teacher learn to appreciate, plan, organize, and conduct (if called upon to do so) a quality physical education program for children in grades pre-K-5. The pre-service teacher (PT) will be provided background knowledge about physical education content, skill themes and movement concepts, how to teach skill themes and movement concepts, and fitness concepts.

**Credits**

2

**KIN465 - TEACHING SECONDARY PE****Long Course Title**

METHODS OF TEACHING PHYSICAL EDUCATION IN THE SECONDARY SCHOOL

**Course Description**

Physical education teacher candidates will acquire the ability to understand, recognize, analyze, and demonstrate the range of teaching skills employed by successful educators in the secondary setting.

**Credits**

3

**KIN473 - SPORT & FITNESS MANAGEMENT****Long Course Title**

SPORT AND FITNESS MANAGEMENT

**Course Description**

The course is an in-depth analysis of the relationship of sport and management. The study of sport includes sporting goods manufacturers; fitness centers; recreation departments; broadcasting; Little League teams; and high school, NCAA, and professional leagues. The study of management follows the four functions of management: planning, organizing, leading, and controlling.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN265 - INTRO TO SPORT MGMT (3)

**KIN490 - EXERCISE SCIENCE INTERNSHIP****Course Description**

Designed to provide on-site practical experience in a wellness/fitness program, physical therapy clinic, and/or a cardiac rehabilitation facility for Kinesiology-Exercise Science majors.

**Credits**

6

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - KIN351 - EXER TEST & PRECR HEALTHY POP (3)

**KIN510 - RESEARCH METHODS IN KIN****Long Course Title**

RESEARCH METHODS IN KINESIOLOGY

**Course Description**

This course establishes an understanding of key principles related to kinesiology-related research and methodology. Key principles will be to address applicable research techniques and designs while emphasizing the planning and preparation necessary for conducting and reporting kinesiological research.

**Credits**

3

**KIN515 - SEMINAR IN KINESIOLOGY****Long Course Title**

MASTER SEMINAR IN KINESIOLOGY

**Course Description**

This course will provide a format for the further understanding of pertinent, valuable, and meaningful research in the field of kinesiology and human performance assessment. Students will also be prepared for the professional certifications associated with their field of study.

**Credits**

2

**KIN518 - ADV HUMAN PERFORMANCE & TESTING****Long Course Title**

ADVANCED HUMAN PERFORMANCE AND TESTING

**Course Description**

This course will provide students with advanced knowledge in the field of human performance training and evaluation through classroom lectures and laboratory/field experiences. Topics include developing and testing in strength, speed, power, agility, endurance, stability, and flexibility.

**Credits**

3

**KIN519 - EXERCISE & SPORT BIOMECHANICS****Long Course Title**

EXERCISE AND SPORT BIOMECHANICS

**Course Description**

This course is designed to expose students to an understanding of biomechanics in human performance. Biomechanics is the study of forces and their effects on living systems. Sport and exercise biomechanics is specifically the study of forces and their effects on humans in sport and exercise.

**Credits**

3

**Cross-Listed Course**

KIN419 - EXERCISE & SPORT BIOMECHANICS

**KIN520 - LAB TECHNIQUES****Long Course Title**

LABORATORY TECHNIQUES FOR SPORTS SCIENCE

**Course Description**

This course expands on the prerequisite knowledge of basic biomechanics and neuromuscular control and apply it to investigate human movements and characteristics. Topics covered include: kinematics, kinetics, electromyography, isokinetics, physiological, and body composition testing.

**Credits**

3

**KIN527 - CLINICAL EXERCISE PHYSIOLOGY****Long Course Title**

CLINICAL EXERCISE PHYSIOLOGY

**Course Description**

A more in-depth review of exercise physiology, with a particular focus on musculoskeletal performance, metabolic demands, and cardiovascular function. Students should have successfully completed an undergraduate course in exercise physiology or obtain permission of the instructor prior to taking the course for credit.

**Credits**

3

**KIN528 - ENVIRONMENTAL EXERCISE PHYSIOLOGY****Long Course Title**

ENVIRONMENTAL EXERCISE PHYSIOLOGY

**Course Description**

This course will review the principles of environmental exercise physiology and enhance the foundation of knowledge attained through clinical exercise physiology. The goal of this course is to examine how the human body responds and adapts to diverse forms of environmental stress during exercise. Emphasis on delineating the mechanisms which underlie immediate responses and long-term adaptations that humans make while performing exercise under various environmental conditions.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - KIN527 - CLINICAL EXERCISE PHYSIOLOGY (3)

**Cross-Listed Course**

KIN428 - ENVIRONMENTAL EXERCISE PHYSIOLOGY



**KIN540 - SCHOOL AND COMMUNITY HEALTH****Long Course Title**

SCHOOL AND COMMUNITY HEALTH

**Course Description**

Obtain information and skills related to school and community health programs with an emphasis on health instruction, strategies, and resources. Survey the components of a school health program: school health services, healthful school environment, principles of physical and movement education, nutrition services, counseling and social services, parent/community involvement, health promotion for staff. Examine the core functions of public health, prevention of diseases and injuries, health needs of special populations, and functions of various organizations.

**Credits**

3

**KIN547 - PSYCH ASPECTS HEALTH/DISEASE****Long Course Title**

PSYCHOSOCIAL ASPECTS OF HEALTH & DISEASE

**Course Description**

This course will increase students' understanding of the diverse personal, socio-cultural, and institutional factors that influence health, physical activity, and nutrition-related behaviors, and ultimately intervention design and approach. The course will cover the social determinants of health and health disparities, theoretical models of health behavior change, and intervention/behavior change strategies and tools. Students coming away from this course will have a better understanding of how to apply health behavior change models to promote physical activity and healthy eating in diverse populations through tailored interventions.

**Credits**

3

**KIN564 - HEALTH/PE FOR ELEM TEACHER****Long Course Title**

HEALTH AND PE FOR THE ELEMENTARY TEACHER

**Course Description**

The purpose of this course is to help the future elementary classroom teacher learn to appreciate, plan, organize and conduct (if called upon to do so) a quality physical education program for children in grades pre-K-5. The pre-service teacher (PT) will be provided background knowledge about physical education content, skill themes and movement concepts, how to teach skill themes and movement concepts, and fitness concepts.

**Credits**

2

**KIN570 - ADAPTED PHYSICAL EDUCATION****Long Course Title**

ADAPTED PHYSICAL EDUCATION

**Course Description**

Develop knowledge of current concepts and trends in adapted physical education as well as the ability to plan and implement a physical education program designed to meet the unique needs of individuals. Students will understand how to design and implement an Individualized Educational Program for use in an activity-based setting.

**Credits**

3

**KIN621 - INST APPR TO SPT PED****Long Course Title**

INSTRUCTIONAL APPROACHES TO SPORT PEDAGOGY

**Course Description**

This class is designed to expand and enrich the teaching repertoire. Special emphasis will be given to how selected models of teaching can be used to achieve multiple outcomes of teaching in physical education and other contexts (e.g., physical activity programs & youth sport). Additionally, the course will increase awareness in other instructional areas related to the profession (teaching undersevered youth, youth sports programs, etc.,)

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ED501 - INTRO TO EDUCATION

**KIN627 - LIFESPAN PHYS. ACTIVITY HEALTH****Long Course Title**

LIFESPAN PHYSICAL ACTIVITY & HEALTH

**Course Description**

This course discusses physical activity and health across the human lifespan to address either the physiological and physical changes among a pediatric or aging population, based on the instructor's discretion.

**Credits**

3

**KIN630 - PRACTICUM I****Long Course Title**

SPORTS SCIENCE PRACTICUM I

**Course Description**

This course is the first of a two-semester placement with a sports team/program affiliated with UAH Kinesiology. The student will operate/assist the team's Sport Scientist and report to coaches, training staff, and athletes. The course includes monthly seminars with a faculty member.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - KIN510 - RESEARCH METHODS IN KIN (3)
  - KIN520 - LAB TECHNIQUES (3)

**KIN631 - PRACTICUM II****Long Course Title**

SPORTS SCIENCE PRACTICUM II

**Course Description**

This course is the second of a two-semester placement with a sports team/program affiliated with UAH Kinesiology. The student will operate as/assist the team's Sport Scientist and report to coaches, training staff, and athletes. The course includes monthly seminars with a faculty member.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - KIN510 - RESEARCH METHODS IN KIN (3)
  - KIN520 - LAB TECHNIQUES (3)

**KIN655 - MOTOR LEARNING****Long Course Title**

MOTOR LEARNING AND DEVELOPMENT

**Course Description**

Study the principles and practices that affect the learning and development of motor skills; theories of motor learning, motor control, and development; lifespan motor development perspective related to performing motor and sport skills; and professional applications of motor learning and development in exercise science, athletic training and physical education.

**Credits**

3

**KIN657 - CARDIO. EXERCISE PHYSIOLOGY****Long Course Title**

CARDIOPULMONARY EXERCISE PHYSIOLOGY

**Course Description**

This course is an advanced cardiovascular and pulmonary exercise physiology course. This course aims to systematically detail the effects of acute and chronic exercise training on the cardiovascular and pulmonary systems. It is assumed that graduate students already have basic knowledge of human anatomy and exercise physiology.

**Credits**

3

**KIN662 - ELEM PE METHODS****Long Course Title**

ELEMENTARY PHYSICAL EDUCATION METHODS

**Course Description**

Physical education teacher certification will acquire the ability to understand, recognize, analyze and demonstrate the range of teaching skills employed by successful physical educators in the preschool and elementary setting. Emphasis is placed on understanding the theoretical implications of different teaching skills and the contexts in which they are effective. Teacher candidates will design lessons that allow for maximum student participation while remaining aligned with Alabama Consent Standards. Field experience is required. Candidates will observe, participate in, and teach lessons in physical education classrooms.

**Credits**

3

**KIN665 - METHODS TEACHG PHYS EDUC SEC****Long Course Title**

METHODS OF TEACHING PHYSICAL EDUCATION IN SECONDARY SCHOOLS

**Course Description**

Physical education teacher candidates will acquire the ability to understand, recognize, analyze, and demonstrate the range of teaching skills employed by successful educators in the secondary setting. Teacher candidates will design lessons that allow for maximum student participation while remaining aligned with Alabama Consent Standards Field Experience is required. Candidates will observe, participate in, and teach lesson in physical education classrooms.

**Credits**

3

## **KIN670 - CAPSTONE CLINICAL EX PHYS**

### **Long Course Title**

CAPSTONE IN CLINICAL EXERCISE PHYSIOLOGY

### **Course Description**

This course will provide a practical extended experience under the supervision of an exercise science professional, in a program that will enhance the interns exercise science knowledge. Student placement is to a clinical setting, applied health-fitness setting, or health promotion setting that is appropriate to the pursuit of the graduate degree in clinical exercise physiology. Students are also required to attend concurrent integrative seminars with the instructor throughout this experience. The semester long-internship will allow students to experience several aspects of the clinical exercise field including: exercise testing, health evaluation, exercise prescription, creation of exercise programs, 2 diagnostic exercise testing, fitness facility management, health promotion, and the referral and marketing process.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - 12 hours from any KIN 500 - 600 level course(s)
  - Earn a minimum grade of C- in all of the following:
    - KIN527 - CLINICAL EXERCISE PHYSIOLOGY (3)

## **KIN699 - MASTERS THESIS KINESIOLOGY**

### **Long Course Title**

MASTERS THESIS KINESIOLOGY

### **Course Description**

Thesis credit hours are required each semester in which a student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours requires for MSK students. A maximum of 9 hours of credit is awarded upon successful completion of a master's thesis. Requires thesis advisor permission.

### **Credits**

0 - 3

### **Prerequisites**

- Complete all of the following
  - Advisor Permission Required
  - Earn a minimum grade of C- in all of the following:
    - KIN510 - RESEARCH METHODS IN KIN (3)
    - KIN515 - SEMINAR IN KINESIOLOGY (2)
    - KIN520 - LAB TECHNIQUES (3)
    - PY611 - STAT FOR EXPERI METHODS (3)

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## **Library**

## **LIB501 - GRADUATE LIBRARY COURSE**

### **Course Description**

This course provides remote online library access to graduate students when not enrolled in any other course. Graduate students not otherwise enrolled in any other course must enroll in LIB-501 to access online library resources remotely.

### **Credits**

0

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## **Management**

### **MGT100 - INTRO TO BUSINESS**

#### **Long Course Title**

INTRODUCTION TO BUSINESS

#### **Course Description**

Career options for students interested in business are stressed. Fundamentals of business organizations, effective management and the functions of business are explored.

#### **Credits**

1 - 3

### **MGT101 - INTRO ENTREPRENEURSHIP**

#### **Long Course Title**

INTRODUCTION TO ENTREPRENEURSHIP

#### **Course Description**

Introduction to the startup of a new business and the entrepreneurial career. Focuses on elementary concepts of planning, financing, developing, and managing a new business.

#### **Credits**

3

### **MGT301 - MANAGING ORGANIZATIONS**

#### **Long Course Title**

MANAGING ORGANIZATIONS

#### **Course Description**

Introduces management theories, roles, functions, and processes that facilitate the successful operation of organizations. Provides overviews of the following topics: managerial roles and functions, the strategic management process, organizational structure, organizational theory and behavior, and the human resource management function.

#### **Credits**

3

**MGT320 - CAREER DEVELOPMENT****Long Course Title**

CAREER DEVELOPMENT

**Course Description**

Concepts drawn from theories on career development, human capital, social networks, labor markets, and strategic management will provide a theoretical foundation for students to formulate short and long- term career goals and a strategic plan for achieving those goals.

**Credits**

3

**MGT361 - ORGANIZATIONAL BEHAVIOR****Long Course Title**

ORGANIZATIONAL BEHAVIOR

**Course Description**

Behavioral science approach to the study of individual performance. Performance evaluation, job design, employee turnover, organizational culture, communication process, work motivation, leadership, group dynamics, and organizational development.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT301 - MANAGING ORGANIZATIONS (3)

**MGT363 - HUMAN RESOURCE & LABOR REL MGT****Long Course Title**

HUMAN RESOURCE & LABOR RELATIONS MANAGEMENT

**Course Description**

Theories and practices related to human resource management functions, including strategic planning, internal and external staffing, training and development, compensation management, employee and labor relations, and international human resource management.

**Credits**

3

**Prerequisites**

- Earned minimum grade of D- or concurrently enrolled in all of the following:
  - MGT301 - MANAGING ORGANIZATIONS (3)

**MGT401 - INTRO TO CONTRACT MANAGEMENT****Long Course Title**

INTRODUCTION TO CONTRACT MANAGEMENT

**Course Description**

General survey in contracting basics, covering procedures as described by Federal Acquisition Regulations, statutes, ethics, policies, and other pertinent authorities.

**Credits**

3

**Cross-Listed Course**

MGT501 - INTRO TO CONTRACT MANAGEMENT

**MGT402 - CONTRACT EVALUATION & AWARD****Course Description**

Study of the evaluation, award, and post-award aspects of the contracting process, focusing on federal government contracting. Covers acquisition and past performance evaluation; the proposal receipt process; and post-award contract administration, closeout, modifications, and dispute resolution.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT401 - INTRO TO CONTRACT MANAGEMENT (3)

**Cross-Listed Course**

MGT502 - CONTRACT EVALUATION & AWARD

**MGT403 - CONTRACT PRICING & COST ANALYSIS****Long Course Title**

CONTRACT PRICING & COST ANALYSIS

**Course Description**

Study of methods of price analysis and cost estimation and analysis. Covers data sources, legal requirements, rates, definitions, projection methods, factors affecting profits/fees, the weighted guidelines technique, statistical analysis methods, and learning curve theory.

**Credits**

3

**Cross-Listed Course**

MGT503 - CONTRACT PRICING & COST ANALYSIS



## **MGT405 - NEW VENTURE STRATEGIES**

### **Course Description**

Theory and application of strategies for start-up, operation, and control of new ventures. Roles of entrepreneurship in the economy. Case studies of corporate and independent new ventures.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MGT505 - NEW VENTURES STRATEGIES

## **MGT408 - TEAMWORK & TEAM PROCESSES**

### **Course Description**

This course provides an introduction to teams and teamwork processes. The foundation of the course is research-based; topics will be approached from the context of empirical research. The types of research designs that are typically used in team research are addressed.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Junior or higher

### **Cross-Listed Course**

MGT508 - TEAMWORK & TEAM PROCESSES

## **MGT410 - LEADERSHIP, PERSONAL DEV & ORG**

### **Long Course Title**

LEADERSHIP, PERSONAL DEVELOPMENT, & ORGANIZATIONS

### **Course Description**

The focus of this course is on the in-depth self-examination of skills, ability, personality, attitudes, values and behavior to increase self-awareness of leadership competencies. Students will also examine theories of leadership to develop insights for their personalized leadership development.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT301 - MANAGING ORGANIZATIONS (3)

**MGT450 - INTERNATIONAL BUSINESS****Long Course Title**

INTERNATIONAL BUSINESS

**Course Description**

Explores the economic, social, political, cultural, and legal environment of global business operations and considers how environmental effects on business programs and strategies. Relies on a variety of conceptual, methodological and application perspectives.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - FIN301 - PRINCIPLES OF FINANCE (3)

**Cross-Listed Course**

MGT550 - INTERNATIONAL BUSINESS

**MGT460 - EMPLOYEE STAFFING & DEVELOP****Long Course Title**

EMPLOYEE STAFFING & DEVELOPMENT

**Course Description**

The study of employee staffing and development concepts, issues and tools. Topics include forecasting staffing needs, recruitment strategies, development and validation of selection procedures, placement, socialization and development of employees, and the utilization of contingent workers.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)

**Cross-Listed Course**

MGT560 - EMPLOYEE STAFFING & DEVELOP

**MGT461 - STRATEGIC COMPENSATION MGMT****Long Course Title**

STRATEGIC COMPENSATION MANAGEMENT

**Course Description**

Introduction to management of employees' compensation. Overview of compensation practices, behavioral and economic theories of compensation, and research on compensation programs.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MSC287 - BUSINESS STATISTICS I (3)
  - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)

**Cross-Listed Course**

MGT561 - STRATEGIC COMPENSATION MGMT

**MGT462 - EMPLOYMENT LAW FOR MANAGERS****Long Course Title**

EMPLOYMENT LAW FOR MANAGERS

**Course Description**

The study of government regulation of the management of human resources. Examines employer responsibilities and employee rights under federal state law pertaining to separations, discrimination, compensation and other terms of employment, worker safety and health, privacy, and unions.

**Credits**

3

**Cross-Listed Course**

MGT562 - EMPLOYMENT LAW FOR MANAGERS

**MGT470 - SPEC TOPICS SEMINAR IN MGMT****Long Course Title**

SPECIAL TOPICS SEMINAR IN MANAGEMENT

**Course Description**

In-depth study of a selected topic relevant to contemporary management. Different sections of this course may address different topics.

**Credits**

3

**Cross-Listed Course**

MGT570 - SPEC TOPICS SEM MGT OF TECH

## **MGT490 - SPECIAL PROJECTS**

### **Course Description**

Active involvement in an on-going project in a business enterprise that has particular interest and relevance to the student, or an in-depth investigation of contemporary management problems.

### **Credits**

1 - 3

## **MGT494 - PRACTICUM IN MANAGEMENT**

### **Long Course Title**

PRACTICUM IN MANAGEMENT

### **Course Description**

Student teams will apply management concepts and skills in a semester-long business simulation or management project conducted for a client firm or non-profit. The teams will be closely supervised by a faculty member with expertise related to the simulation or project.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MSC287 - BUSINESS STATISTICS I (3)
  - MSC288 - BUSINESS STATISTICS II (3)

### **Equivalent Course(s)**

MKT494 - PRACTICUM IN MARKETING

## **MGT495 - INTERNSHIP IN MANAGEMENT**

### **Long Course Title**

INTERNSHIP IN MANAGEMENT

### **Course Description**

Under the direction of a faculty advisor, experience is gained with an entrepreneur in a small business firm or a manager in a large firm. Subject to College's guidelines on internships.

### **Credits**

1 - 3

## **MGT499 - COMPETITIVE STRATEGY**

### **Course Description**

Addresses formulation & implementation of business/corporate level strategies: defining the mission, setting goals and objectives, analyzing current operating conditions and the organization's environment, and setting a unified strategic direction. Recommended taking during final semester of degree. Upper division standing required. Student must obtain a grade of C or higher.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

## **MGT501 - INTRO TO CONTRACT MANAGEMENT**

### **Long Course Title**

INTRODUCTION TO CONTRACT MANAGEMENT

### **Course Description**

General survey in contracting basics, covering procedures as described by Federal Acquisition Regulations, statutes, ethics, policies, and other pertinent authorities.

### **Credits**

3

### **Cross-Listed Course**

MGT401 - INTRO TO CONTRACT MANAGEMENT

## **MGT502 - CONTRACT EVALUATION & AWARD**

### **Long Course Title**

CONTRACT EVALUATION & AWARD

### **Course Description**

This course introduces the student to topics related to the evaluation, award and post award portions of the contracting process. Elements of evaluation related to competitive acquisitions and past performance evaluation are reviewed. Steps related to the proposal receipt process such as contractor responsibility, debarred/suspended, and certificate of competency are covered. The award process is also covered by a discussion offeror, and preparation of award. Post award topics such as contract administration functions, contract closeout, contract modifications, remedies, claims, disputes and request for equitable adjustments are covered.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)

### **Cross-Listed Course**

MGT402 - CONTRACT EVALUATION & AWARD

## **MGT503 - CONTRACT PRICING & COST ANALYS**

### **Long Course Title**

CONTRACT PRICING & COST ANALYSIS

### **Course Description**

Techniques for cost estimating, cost analysis, and price analysis. Sources of data, statutory requirements, rates, factors, and definitions, projection methods, factors affecting profit or fee, weighted guidelines technique, application of statistical analysis including regression analysis, and learning curve theory.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in at least 1 of the following:
  - ACC540 - BASIC GOVERNMENT CONTRACT ACCT (3)
  - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)

### **Cross-Listed Course**

MGT403 - CONTRACT PRICING & COST ANALYS

## **MGT505 - NEW VENTURES STRATEGIES**

### **Course Description**

Theory and application of both marketing and management strategies for start-up, operation and control of new ventures. The course also discusses the role of entrepreneurship in the economy.

### **Credits**

3

### **Cross-Listed Course**

MGT405 - NEW VENTURE STRATEGIES

**MGT508 - TEAMWORK & TEAM PROCESSES****Long Course Title**

TEAMWORK & TEAM PROCESSES

**Course Description**

This course provides an introduction to teams and teamwork processes. The foundation of the course is research-based; topics will be approached from the context of empirical research that has been conducted. The types of research designs that are typically used in team research are addressed. There are hands-on activities, so that students can put the theoretical material into context and into practice. This course is ideal for students who plan to work in business settings or in team-oriented fields (e.g., engineering, the military) or become involved in human resources or team training.

**Credits**

3

**Cross-Listed Course**

MGT408 - TEAMWORK & TEAM PROCESSES

**MGT550 - INTERNATIONAL BUSINESS****Course Description**

This course combines theoretical and practical aspects of doing business in the global market. It addresses the complex environment of international business and the need to investigate its various economic, social, political, cultural, and legal dimensions from conceptual, methodological and applications perspectives. It then considers how these environmental factors would affect, and can be integrated into, business programs and strategies.

**Credits**

3

**Cross-Listed Course**

MGT450 - INTERNATIONAL BUSINESS

**MGT560 - EMPLOYEE STAFFING & DEVELOP****Long Course Title**

EMPLOYEE STAFFING & DEVELOPMENT

**Course Description**

Study of the fundamental concepts, issues and tools of employee staffing and development. Topics include forecasting staffing needs, recruitment strategies, development and validation of selection procedures, placement, socialization, and development of employees, and the utilization of contingent workers.

**Credits**

3

**Cross-Listed Course**

MGT460 - EMPLOYEE STAFFING & DEVELOP

**MGT561 - STRATEGIC COMPENSATION MGMT****Long Course Title**

STRATEGIC COMPENSATION MANAGEMENT

**Course Description**

Introduction to the management of employees compensation. Provides an overview of compensation practices, behavioral and economic theories of compensation, and research on compensation programs.

**Credits**

3

**Cross-Listed Course**

MGT461 - STRATEGIC COMPENSATION MGMT

**MGT562 - EMPLOYMENT LAW FOR MANAGERS****Course Description**

Analysis of the impact of government regulation on the management of human resources. Examines the implications for employer responsibilities and employee rights of evolving public policies pertaining to separations, discrimination, compensation, occupational safety and health, privacy, union-management relations, and other terms of employment.

**Credits**

3

**Cross-Listed Course**

MGT462 - EMPLOYMENT LAW FOR MANAGERS

**MGT570 - SPEC TOPICS SEM MGT OF TECH****Long Course Title**

SPECIAL TOPICS SEMINAR IN MANAGEMENT OF TECHNOLOGY

**Course Description**

In depth study of a selected special topic relevant to the management of technology. Different sections of this course may address different topics.

**Credits**

3

**Cross-Listed Course**

MGT470 - SPEC TOPICS SEMINAR IN MGMT

**MGT595 - INTERNSHIP IN MANAGEMENT****Long Course Title**

INTERNSHIP IN MANAGEMENT

**Course Description**

Under the direction of a faculty advisor, student gains experience with an entrepreneur in a small business firm or a manager in a large firm.

**Credits**

1 - 3



**MGT600 - ORGAN THRY, BEHAV & ENVIRONMEN****Long Course Title**

ORGANIZATIONAL THEORY, BEHAVIOR, & ENVIRONMENT

**Course Description**

Provides the conceptual tools to analyze the behavioral and organizational influences on systematic outputs such as quality, profitability, and employee well-being. Focuses both on macro-level issues (e.g. organizational design, culture, power and politics, and strategic leadership) and on micro-level issues (e.g. motivation, decision-making, socialization, and diversity). Covers these topics in the broader social, legal, regulatory, environmental, and ethical context.

**Credits**

3

**MGT601 - TECH & INNOVATION MGMT****Long Course Title**

TECHNOLOGY & INNOVATION MANAGEMENT

**Course Description**

This course covers the principles, theories, and practices to enhance an organization's competitive position through the management of technology and innovation. Topics include the environmental and industry drivers of technological change, organizational issues in the adoption of new technologies, innovation and disruption, development of technical core competencies, and leadership challenges posed by innovation and change. It includes readings, lectures, cases, and the completion of a major research/practical project.

**Credits**

3

**MGT622 - MANAGING HUMAN CAPITAL****Long Course Title**

MANAGING HUMAN CAPITAL

**Course Description**

An organization's people are one of the most important resources that affect organizational performance. This course examines techniques to manage a firm's human capital resources. Topics include organizational culture, incentive systems, employee motivation, team decision-making, job design, evaluating performance, information systems for managers, employment law, selection, managing innovation, and career development.

**Credits**

3

**MGT629 - LEADERSHIP: THRY & PRACTICE****Long Course Title**

LEADERSHIP: THEORY & PRACTICE

**Course Description**

The course explores what is known about leadership with particular emphasis on those attributes and skills that allow leaders to be effective in a variety of organizational situations. The theories of leadership are explored in a framework that includes the relationship of the leader to followers and situations. Frequent appearances by guest speakers who are themselves leaders provide the critical linkage to real world practice and allow for student interaction.

**Credits**

3

**MGT631 - HRM & ORGANIZATIONAL BEHAVIOR****Long Course Title**

HUMAN RESOURCE MANAGEMENT & ORGANIZATIONAL BEHAVIOR

**Course Description**

The major functions of human resource management are reviewed, including performance management, employment law, staffing, HR planning, compensation, labor relations, and training. Behavioral management topics include motivation, leadership, communication, managing conflict, and managing teams.

**Credits**

3

**MGT640 - PRIN OF PROJECT MGMT****Long Course Title**

PRINCIPLES OF PROJECT MANAGEMENT

**Course Description**

Conceptual foundation and organization of project management. The project life cycle, planning, control, marketing, utilization of human resources, and financial management.

**Credits**

3

**MGT650 - SELECTED RESEARCH TOPICS****Long Course Title**

SELECTED RESEARCH TOPICS

**Course Description**

Research in a particular topic relevant to a business discipline by one student or a group of students. The research paper must be an original contribution showing a research design and results that meet the highest standards of social science research.

**Credits**

3

**MGT690 - SEMINAR IN TECH MANAGEMENT****Long Course Title**

SEMINAR IN TECHNOLOGY MANAGEMENT

**Course Description**

Practical management of technology methods and techniques from current research and successful industrial practice. Examines the state of the art in industrial new product development management. Lectures, cases, readings, and an emphasis on student discussions, presentations and interactions. The course has a strong research orientation while at the same time focusing on management policies and principles.

**Credits**

3

## **MGT693 - SUPPLY CHAIN STRATEGY & PRACT**

### **Long Course Title**

SUPPLY CHAIN STRATEGY & PRACTICE

### **Course Description**

This integrative course discusses the strategic role of supply chain management in organizations and develops a working knowledge of the process of formulating and implementing supply chain strategies to gain competitive advantage in a global environment. Topics covered include the linkage of supply chain strategies with corporate strategy, customer relationship and supplier relationship strategies, outsourcing strategies and related infrastructure needs to implement supply chain strategies. A team based practicum project helps students apply concepts and methods to real world problems. Must be completed with a grade of B or higher.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)
  - MSC605 - OPERATIONS MANAGEMENT (3)

## **MGT694 - MANAGEMENT PRACTICUM**

### **Long Course Title**

MANAGEMENT PRACTICUM

### **Course Description**

This course will serve as the capstone for the M.S. in Management degree. Students will work with faculty on either a research or consulting project which will allow the student to explore an area of interest in greater depth or gain additional experience by applying the concepts they have learned in the degree program to a real world challenge faced by an organization. Normally taken during the last semester of the program. Must be completed with a B grade or higher.

### **Credits**

3

## **MGT695 - STRATEGIC HUMAN RESOURCE MGT**

### **Long Course Title**

STRATEGIC HUMAN RESOURCE MANAGEMENT

### **Course Description**

This course will serve as the capstone for the M.S. in Management degree. This integrative course discusses the strategic role of human resources in organizations and teaches students how to formulate and implement HR strategies to gain competitive advantage. Topics covered include strategic management, labor relations, global HRM, social responsibility and HRM, and evidence-based HRM. A team based project helps students apply concepts and methods to real world problems. Normally taken during the last semester of the program. Must be completed with a B grade or higher.

### **Credits**

3

## **MGT698 - STRATEGIC MANAGEMENT**

### **Course Description**

Administrative decision-making with emphasis on analyzing a complex business situation, evaluating historical trends, current operational conditions, and environmental settings, in order to establish a unifying strategy; implementation of integrated functional policies; and a plan of action to achieve established objectives. Normally taken during the last semester of a student's program.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - ACC602 - MANAGERIAL ACCOUNTING (3)
  - ECN626 - MANAGERIAL ECON & TECH (3)
  - FIN601 - FIN DECIS UNDER UNCERTAINTY (3)
  - MSC600 - QUANTITATIVE METHODS (3)

## **MGT699 - MASTER`S THESIS**

### **Long Course Title**

MASTER`S THESIS

### **Course Description**

Required each semester that student is working and receiving direction on a masters thesis. A maximum of 6 hours credit may be applied toward degree.

### **Credits**

1 - 3

## **MGT770 - ORGANIZATIONAL RESEARCH METHOD**

### **Long Course Title**

ORGANIZATIONAL RESEARCH METHODS

### **Course Description**

Theory and practice of research methodology for study of administrative, industrial, and consumer behavior and organizations; questionnaire, field, and laboratory experimentation and statistical analysis of pre-gathered time-series and cross-sectional data; and examples of good and poor research in business disciplines. A completed project of potentially publishable nature is formally presented in class.

### **Credits**

3

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# **Management Science**

## **MSC287 - BUSINESS STATISTICS I**

### **Long Course Title**

BUSINESS STATISTICS I

### **Course Description**

Introduction to probability and business statistics. Covers: tabular, graphical, and numerical methods for descriptive statistics; measures of central tendency, dispersion, and association; probability distributions; sampling and sampling distributions; and confidence intervals. Uses spreadsheets to solve problems.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

Must earn minimum grade of C- in any selected course  
Courses from -

## **MSC288 - BUSINESS STATISTICS II**

### **Long Course Title**

BUSINESS STATISTICS II

### **Course Description**

Inferential statistics for business decisions. Topics include: review of sampling distributions and estimation; inferences about means, proportions, and variances with one and two populations; good of fit tests; analysis of variance and experimental design; simple linear regression; multiple linear regression; non parametric methods.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MSC287 - BUSINESS STATISTICS I (3)

## **MSC385 - OPERATIONS ANALYSIS**

### **Course Description**

Survey of the firm's production function and quantitative tools for solving production problems, quality management, learning curves, assembly and waiting lines, linear programming, inventory, and other selected topics (e.g., scheduling, location, supply chain management). Uses the SAP software.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MSC288 - BUSINESS STATISTICS II (3)

## **MSC410 - TRANSPORTATION & LOGISTICS**

### **Course Description**

An analysis of transportation and logistical services to include customer service, distribution operations, purchasing, order processing, facility design and operations, carrier selection, transportation costing, and negotiation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MSC510 - LOGISTICS MANAGEMENT

## **MSC411 - SUPPLY CHAIN MANAGEMENT**

### **Long Course Title**

SUPPLY CHAIN MANAGEMENT

### **Course Description**

Supply chain management focuses on networks of companies that deliver value to customers. The course focuses on understanding integrated supply chains and examines how product development and design, demand, marketing, globalization, customer locations, distribution networks, suppliers and ERP systems impact a company's supply chain design.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MSC287 - BUSINESS STATISTICS I (3)

**MSC412 - ARMY SENIOR LOGISTICIAN-ADV****Long Course Title**

ARMY SENIOR LOGISTICIAN-ADVANCED

**Course Description**

The Senior Logistician Advanced Course (SLAC) is part of the U.S. Army's Master Logistician Certificate Program for logistics management specialists within the 0346 occupational series. SLAC is an 80-hour academic learning experience designed to improve senior logistician competencies at the strategic level. The program is organized around the logistics management specialist's 12 competencies, and the coursework is specially designed to better develop and further enrich the thinking and skills of the Army's Senior Logisticians. Special approval and enrollment in CPCS U.S. Army Senior Logistician Advanced Course required.

**Credits**

3

**Cross-Listed Course**

MSC512 - ARMY SENIOR LOGISTICIAN-ADV

**MSC450 - INTRO ANALYTICS & PROGRAM****Long Course Title**

INTRODUCTION TO ANALYTICS AND PROGRAMMING

**Course Description**

Data analysis and forecasting using different statistical techniques in Python. Topics include linear regression, diagnostics, model correction, assessment and validation, feature selection, missing data, leverage and outliers, logistic regression, classification, and ARIMA models for time series.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - IS210 - INTRO COMP PROG IN BUS (3)
  - MSC288 - BUSINESS STATISTICS II (3)

**Cross-Listed Course**

MSC550 - INTRO ANALYTICS & PROGRAMMING

## **MSC469 - VISUALIZATION FOR LEADERSHIP**

### **Long Course Title**

DATA VISUALIZATION AND LEADERSHIP COMMUNICATION

### **Course Description**

In depth study of visualization theory and applications, including Tableau, Python data visualization modules, and data visualizations in R. This course will emphasize communication skills and techniques for effective technical and leadership presentations.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - IS210 - INTRO COMP PROG IN BUS (3)
  - Earned minimum grade of D- or concurrently enrolled in at least 1 of the following:
    - IS471 - BUSINESS ANALYTICS & AI (3)
    - MSC450 - INTRO ANALYTICS & PROGRAM (3)

### **Cross-Listed Course**

MSC569 - VISUALIZATION FOR LEADERSHIP

## **MSC470 - SPECIAL TOPICS IN MGMT SCI**

### **Long Course Title**

SPECIAL TOPICS IN MANAGEMENT SCIENCE

### **Course Description**

In depth study of a selected topic relevant to contemporary management science. Different sections of this course may address different topics.

### **Credits**

3

### **Cross-Listed Course**

MSC570 - SPECIAL TOPICS IN MGMT SCI

## **MSC490 - SPECIAL PROJECTS**

### **Long Course Title**

SPECIAL PROJECTS

### **Course Description**

Independent study in an area of interest to the student in the field of management science.

### **Credits**

3

### **Prerequisites**

- Department Chair Permission Required



**MSC494 - PRACTICUM IN MANAGEMENT SCIENC****Long Course Title**

PRACTICUM IN MANAGEMENT SCIENCE

**Course Description**

Student teams will apply management science concepts and skills in a semester-long simulation or management science project conducted for a client firm or non-profit. The teams will be closely supervised by a faculty member with expertise related to the simulation or project.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MSC287 - BUSINESS STATISTICS I (3)
  - MSC288 - BUSINESS STATISTICS II (3)
  - MSC385 - OPERATIONS ANALYSIS (3)

**Equivalent Course(s)**

MGT494 - PRACTICUM IN MANAGEMENT

**MSC495 - INTERN IN MGMT SCIENCE****Long Course Title**

INTERNSHIP IN MANAGEMENT SCIENCE

**Course Description**

Active involvement in a project in a business enterprise, professional organization or in a government agency that has particular interest and relevance to the student. Subject to College's guidelines on internships.

**Credits**

3

**MSC500 - DEC SUPPORT SYS/EXPT SYS****Long Course Title**

DECISION SUPPORT SYSTEMS/EXPERT SYSTEMS

**Course Description**

Analysis of information support systems which aid the manager in the decision-making process.

**Credits**

3

**MSC510 - LOGISTICS MANAGEMENT****Long Course Title**

LOGISTICS MANAGEMENT

**Course Description**

An analysis of transportation and logistical services to include customer service, distribution operations, purchasing, order processing, facility design and operations, carrier selection, vehicle routing, and transportation costs. Understanding of business statistics is required.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MSC600 - QUANTITATIVE METHODS (3)

**Cross-Listed Course**

MSC410 - TRANSPORTATION & LOGISTICS

**MSC512 - ARMY SENIOR LOGISTICIAN-ADV****Long Course Title**

ARMY SENIOR LOGISTICIAN-ADVANCED

**Course Description**

The Senior Logistician Advanced Course (SLAC) is part of the U.S. Army's Master Logistician Certificate Program for logistics management specialists within the 0346 occupational series. SLAC is an 80-hour academic learning experience designed to improve senior logistician competencies at the strategic level. The program is organized around the logistics management specialist's 12 competencies, and the coursework is specially designed to better develop and further enrich the thinking and skills of the Army's Senior Logisticians. Special approval and enrollment in CPCS U.S. Army Senior Logistician Advanced Course required.

**Credits**

3

**MSC550 - INTRO ANALYTICS & PROGRAMMING****Long Course Title**

INTRODUCTION TO ANALYTICS AND PROGRAMMING

**Course Description**

This course will have an overview on business analytics. Students will learn tools commonly used in business analytics such as R and Python. This is a prerequisite for several business analytics courses.

**Credits**

3

**Cross-Listed Course**

MSC450 - INTRO ANALYTICS & PROGRAM

**MSC569 - VISUALIZATION FOR LEADERSHIP****Long Course Title**

VISUALIZATION FOR LEADERSHIP

**Course Description**

In depth study of visualization theory and applications, including Tableau, Python data visualization modules, and data visualizations in R. This course will emphasize communication skills and techniques for effective technical and leadership.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - IS571 - BUSINESS ANALYTICS & AI (3)

**Cross-Listed Course**

MSC469 - VISUALIZATION FOR LEADERSHIP

**MSC570 - SPECIAL TOPICS IN MGMT SCI****Long Course Title**

SPECIAL TOPICS IN MANAGEMENT SCIENCE

**Course Description**

In depth study of a selected topic relevant to contemporary management science. Different sections of this course may address different topics.

**Credits**

3

**Cross-Listed Course**

MSC470 - SPECIAL TOPICS IN MGMT SCI

**MSC595 - INTERNSHIP IN MANAGEMENT SCIEN****Long Course Title**

INTERNSHIP IN MANAGEMENT SCIENCE

**Course Description**

Active involvement in a project in a business enterprise, professional organization or government agency that has particular interest and relevance to the student.

**Credits**

1 - 3

## **MSC600 - QUANTITATIVE METHODS**

### **Long Course Title**

QUANTITATIVE METHODS

### **Course Description**

An introduction to and application of several fundamental quantitative methods and business analytics tools in business. Topics include probability distributions, sampling distributions, confidence interval estimation, hypothesis testing, ANOVA, linear regression, linear optimization, and simulation. Basic proficiency in Excel is required.

### **Credits**

3

## **MSC605 - OPERATIONS MANAGEMENT**

### **Course Description**

This course discusses the management of the operations function for the creation of goods and services and its relationship with other business functions in service, manufacturing, and government organizations. Topics include operations strategy and infrastructure decisions, merging process technologies, planning and scheduling, inventory management, just-in-time systems, quality management, six sigma and lean operations. Concepts are illustrated using the SAP software.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MSC600 - QUANTITATIVE METHODS (3)

## **MSC610 - MODELING & SIMULATION**

### **Long Course Title**

MODELING & SIMULATION

### **Course Description**

Broad-based introductory survey of modeling and simulation intended to provide an overview that exposes those who will be using modeling and simulation to the full range of the discipline. Surveyed items include identification, categorization, and comparison of modeling methods, applications, architectures, and environments. Also covered are appropriate applications for different simulation paradigms, and relative advantages and disadvantages of each. Model testing and validation approaches, distributed simulation, graphics and visualization, and other topics are introduced. Case studies are discussed.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MSC600 - QUANTITATIVE METHODS (3)

## **MSC611 - SUPPLY CHAIN MANAGEMENT**

### **Long Course Title**

SUPPLY CHAIN MANAGEMENT

### **Course Description**

Supply chain management focuses on networks of companies that deliver value to customers. The course focuses on understanding integrated supply chains and examines how product development and design, demand, marketing, globalization, customer locations, distribution networks, suppliers and ERP systems impact a company's supply chain design.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - MSC600 - QUANTITATIVE METHODS (3)

## **MSC615 - DECISION MODELING**

### **Course Description**

This course focuses on tools and methods for modeling, analyzing and solving problems involving business decision-making. Spreadsheet analysis, optimization, and simulation techniques will be covered. Topics include linear and nonlinear optimization, network models, decision analysis and simulation of complex models in a spreadsheet environment as well as using other commercial software packages. Proficiency in Excel is required.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MSC600 - QUANTITATIVE METHODS (3)

## **MSC622 - ANALYTICS FOR MANAGERS**

### **Long Course Title**

ANALYTICS FOR MANAGERS

### **Course Description**

Data has quickly become one of the most important corporate assets for many firms and should be leveraged to gain a competitive advantage. This course will teach managers to leverage data using statistical techniques including predictive modeling to improve data-driven decision-making.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MSC600 - QUANTITATIVE METHODS (3)

## **MSC641 - ADVANCED ANALYTICS**

### **Long Course Title**

ADVANCED ANALYTICS

### **Course Description**

This course focuses on concepts and methods in business analytics. Topics include data quality and cleaning, predictive modeling, design of experiments, segmentation, forecasting, usage and limitations of models, and interpretation and presentation of results. This course provides a hands-on environment using real data to prepare students to apply these techniques in business environments. Proficiency in Excel is required.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MSC550 - INTRO ANALYTICS & PROGRAMMING (3)
  - MSC600 - QUANTITATIVE METHODS (3)

## **MSC650 - SELECTED RESEARCH TOPICS**

### **Long Course Title**

SELECTED RESEARCH TOPICS

### **Course Description**

Research in a particular topic relevant to management science by one student or a group of students. Each student's research paper must be an original contribution showing a research design and results that meet the highest standard of management science research.

### **Credits**

3

## **MSC690 - MANAGING TECH DEVELOPMENT**

### **Long Course Title**

MANAGING TECHNOLOGY DEVELOPMENT

### **Credits**

3

### **Equivalent Course(s)**

MGT690 - SEMINAR IN TECH MANAGEMENT

## **MSC692 - BUSINESS ANALYTICS PRACTICUM**

### **Course Description**

A capstone course with an emphasis on rigorously interpreting the results of analytic models and intuitively communicating the derived business insights to business clients and corporate executives. The majority of this course is devoted to a major practical project in which students apply skills learned from previous analytics courses to a real world business problem, preferably in cooperation with a local organization. Normally taken during the student's last semester of studies.

### **Credits**

3

**MSC693 - SUPPLY CHAIN STRATEGY****Long Course Title**

SUPPLY CHAIN STRATEGY

**Course Description**

In this integrative capstone course, we investigate the strategic role of supply chain management in organizations and develop a working knowledge of how to formulate and implement supply chain strategies to gain competitive advantage in a global environment. This course will build upon the study of strategies and capabilities from MGT 611.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - MSC611 - SUPPLY CHAIN MANAGEMENT (3)

**MSC699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester a student is working and receiving direction on a masters thesis. A minimum of two terms is required, but no more than six hours credit is allowed for the thesis.

**Credits**

1 - 3

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## Marine Science

**MS202 - MARINE BIOLOGY****Long Course Title**

MARINE BIOLOGY

**Course Description**

Survey of invertebrates, vertebrates, and marine plants as communities with local examples. Examination of marshland, estuarine, beach, dune, inlet and neritic habitats, and niches. Lecture/Lab/field work. Offered only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, AL.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS120 - ORGANISMAL BIOLOGY (3)

**MS204 - COM MARINE FISHERIES/ALA****Long Course Title**

COMMERCIAL MARINE FISHERIES IN ALABAMA

**Course Description**

Biology, harvesting technology, and processing of commercially valuable fish and shellfish species of Alabama. Offered only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, Alabama. No credit for biological sciences major or minor; can be used for marine science minor.

**Credits**

2

**MS301 - MARINE TECH METHODS I****Long Course Title**

MARINE SCIENCE TECHNIQUES AND METHODS I

**Course Description**

Marine science research equipment, methods, and techniques. Operation and field maintenance of major sampling gear. Only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, Alabama. No credit for biological sciences major or minor; can be used for a marine science minor.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS120 - ORGANISMAL BIOLOGY (3)

**MS303 - COASTAL CLIMATOLOGY****Course Description**

Physical factors resulting in climatic conditions in and near coastal region. Emphasis on northern Gulf of Mexico. Only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, Alabama. No credit toward a biological sciences major or minor; can be used for a marine science minor.

**Credits**

2

**MS304 - COASTAL ZONE MANAGEMENT****Course Description**

Examination of ecological features and physical management policies design for coastal communities and a review of the federal and state programs that impinge upon coastal ecological communities. Only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, Alabama.

**Credits**

2

**MS491 - SPECIAL TOPICS IN MARINE SCIEN****Credits**

3



**MS501 - INTRO TO OCEANOGRAPHY****Long Course Title**

INTRO TO OCEANOGRAPHY

**Course Description**

Physics, chemistry, biology, and geology of oceans. For graduate students and those preparing for graduate school or intending to enter marine sciences professionally.

**Credits**

4

**MS502 - MARINE BOTANY****Long Course Title**

MARINE BOTANY

**Course Description**

Survey of marine algae, vascular, and nonvascular plants associated with marine environment. Distribution, identification, structure, ecology, and reproduction.

**Credits**

4

**MS503 - MAR INVERTEBRATE ZOO I****Long Course Title**

MARINE INVERTEBRATE ZOOLOGY I

**Course Description**

Local examples of principal groups of marine invertebrates. Reproduction, distribution, taxonomy, systematics, and ecology. Lecture, laboratory, and fieldwork. Opportunity to acquire collection of local fauna.

**Credits**

4

**MS505 - MARINE VERTEBRATE ZOO****Course Description**

Marine fishes, reptiles, and mammals. Comprehensive treatment of their systematics, zoogeography, and ecology. Lectures on nonregional basis. Field and laboratory work on vertebrate fauna of northern Gulf of Mexico. Most of course on fishes. Opportunity to assemble collection of vertebrate species.

**Credits**

4

**MS509 - MARINE ECOLOGY****Long Course Title**

MARINE ECOLOGY

**Course Description**

Bioenergetics, community structure, population dynamics, predation, competition, and speciation in marine ecosystems. Lecture, laboratory, and fieldwork. Students admitted without previous marine courses. For engineers and other non-biologists interested in marine environment. Individual species as they relate to ecological principles exemplifying taxonomic and ecologic backgrounds.

**Credits**

4

**MS510 - MARSH ECOLOGY****Course Description**

Basic understanding of ecology of salt marsh. Habitat analysis, natural history studies, and population dynamics of selected vertebrates. Specific field problem terminated by a technical paper assigned to each student. For advanced undergraduates and graduate students.

**Credits**

4

**MS515 - COASTAL ORNITHOLOGY****Course Description**

Coastal and pelagic birds with emphasis on ecology, taxonomy, and distribution. Food habits, field identification, and population dynamics.

**Credits**

4

**MS520 - MARINE GEOLOGY****Long Course Title**

MARINE GEOLOGY

**Course Description**

Sampling techniques, laboratory analysis of sediments, application of research process to problems in identifying sedimentary environments, topography, sediments, and history of world oceans. Beneficial for understanding sedimentary substrate on or in which a large percentage of marine organisms live. Lecture, laboratory, and fieldwork.

**Credits**

4

**MS525 - MARINE BIOL FOR TEACHERS****Credits**

6

## **MS599 - RESEARCH ON SPECIAL TOPICS**

### **Course Description**

Enrollment by special arrangement in any subjects listed.

### **Credits**

1 - 4

## **MS691 - SPECIAL TOPICS IN MARINE SCIEN**

### **Credits**

1 - 4

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# **Marketing**

## **MKT301 - PRINCIPLES OF MARKETING**

### **Long Course Title**

PRINCIPLES OF MARKETING

### **Course Description**

This course introduces students to the fundamental concepts and principles of marketing, providing a comprehensive overview of the role of marketing in business and society.

### **Credits**

3

## **MKT315 - SALES MGT/PROF SELLING**

### **Long Course Title**

SALES MANAGEMENT/PROFESSIONAL SELLING

### **Course Description**

Integration of techniques and concepts of professional selling with problems of sales management. Objectives and policies for sales managers concerning managing sales force and methods of marketing analysis in terms of sales forecasts and budgeting. Problems faced by sales management in competition, pricing, and promotion.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

**MKT316 - RETAILING POLICY/MGT****Long Course Title**

RETAILING POLICY/MANAGEMENT

**Course Description**

Policies, practices, and problem solutions in efficient operation of chain and independent retail stores. Store location, organizational layout, merchandise planning and control, buying, pricing, and promotion.

**Credits**

3

**MKT332 - BUYER BEHAVIOR****Long Course Title**

BUYER BEHAVIOR

**Course Description**

Interdisciplinary approach to analyze and interpret consumer buying habits and motives and the resultant purchases of goods and services. An understanding of consumers and their behavior is critical as a purchaser's psychological, economic, and sociocultural actions and reactions relate to better understanding of consumption.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

**MKT342 - PROMOTIONAL STRATEGY****Long Course Title**

PROMOTIONAL STRATEGY

**Course Description**

Promotional techniques available to marketing management. Consumer behavior and communication process by which products can be effectively promoted. Specific tools of personal selling, advertising, sales promotion, and publicity as components of overall promotional strategy.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

## **MKT343 - MARKETING RESEARCH**

### **Long Course Title**

MARKETING RESEARCH

### **Course Description**

Introduction to the principles and purposes of marketing research; relationship to other marketing functions and data sources. Application of the principles and purposes of marketing research; qualitative research methods, experimental design, survey and questionnaire design, sampling procedures, and data analysis.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - MKT301 - PRINCIPLES OF MARKETING (3)
  - Complete 1 of the following
    - Earn a minimum grade of D- in all of the following:
      - MSC287 - BUSINESS STATISTICS I (3)
      - MSC288 - BUSINESS STATISTICS II (3)
    - Earn a minimum grade of D- in at least 1 of the following:
      - CM370 - COMM RESEARCH METHODS (3)
      - PY300 - PSYCHOLOGICAL STATISTICS (3)
      - SOC303 - STATISTICS/SOCIAL SCIENCES (3)

## **MKT344 - MARKETING ANALYTICS**

### **Long Course Title**

MARKETING ANALYTICS

### **Course Description**

Introduction to digital initiatives and data-informed decision-making; evaluate strategic analytics plans, gather structured and unstructured data, analyze large digital datasets, and solve marketing problems in a scientific and process-driven manner.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - MKT343 - MARKETING RESEARCH (3)

## **MKT345 - MKT CHANNEL STRUCT & STRATEGY**

### **Long Course Title**

MARKETING CHANNEL STRUCTURE & STRATEGY

### **Course Description**

Marketing channels as a functional area and the alternative choices available to marketing management in developing overall marketing strategy. Institutional structures and dynamic interrelationships in distribution logistics.

### **Credits**

3

## **MKT350 - MARKETING EMERGING TECHNOLOGY**

### **Course Description**

Comprehensive review of the new product development and marketing process. Emphasizes actual case examples showing how companies develop and market radically new products.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

## **MKT405 - NEW VENTURE STRATEGIES**

### **Course Description**

Theory and application of both marketing and management strategies for start up, operation and control of new ventures. The course also discusses the role of entrepreneurship in the economy.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - MGT301 - MANAGING ORGANIZATIONS (3)

### **Cross-Listed Course**

MKT505 - NEW VENTURE STRATEGIES

## **MKT415 - INTERNATIONAL MARKETING**

### **Long Course Title**

INTERNATIONAL MARKETING

### **Course Description**

Procedures and problems associated with establishing and carrying out marketing operations in or with foreign companies. Institutions, principles, and methods involved in solving these business problems. Effect of national differences in business practices and regulation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MKT515 - INTERNATIONAL MARKETING

## **MKT420 - SERVICES MARKETING**

### **Long Course Title**

SERVICES MARKETING

### **Course Description**

Addresses the challenge of delivering quality service to customers. Focuses on organizations whose core products are services (e.g., banks, hospitals, non-profit organizations) or which depend on service excellence for competitive advantage.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MKT520 - SERVICES MARKETING

## **MKT465 - MARKETING FOR NEW VENTURES**

### **Course Description**

The goal is to provide a solid background with practical application of theories, concepts, and techniques at the interface of entrepreneurship and marketing. Student will learn the cutting-edge development in entrepreneurial practices with hands-on experience. The course will rely on class discussion, case analysis, and group project on marketing for entrepreneurs.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - FIN301 - PRINCIPLES OF FINANCE (3)

### **Cross-Listed Course**

MKT565 - MARKETING FOR NEW VENTURES

## **MKT470 - SOCIAL MEDIA MARKETING**

### **Long Course Title**

SOCIAL MEDIA MARKETING

### **Course Description**

The course focuses on how to meet the challenge of brand building in a digital age. It aims to foster the students' acquisition of social media marketing skills, equipping them with relevant knowledge of how to incorporate social media into marketing strategy thus enhancing value to both companies and customers. As future marketers, students will learn how to adopt a customer centric approach to their future marketing tasks, and be guided through a number of hands-on assignments that are immediately applicable to marketing practices.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MKT570 - SOCIAL MEDIA MARKETING

## **MKT472 - DIGITAL MARKETING**

### **Long Course Title**

DIGITAL MARKETING

### **Course Description**

Digital marketing has become an essential component of any firms marketing strategy. This course conducts an in-depth study of display advertising, search optimization and social media marketing, at both the tactical and strategic levels. Focus will be on outcome and effectiveness measurement methods and campaign evaluation metrics.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Earn a minimum grade of D- in all of the following:
    - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MKT572 - DIGITAL MARKETING



## **MKT475 - ADVANCED MARKETING SEMINAR**

### **Course Description**

Investigation of advanced marketing topics that are relevant to contemporary marketing practices. The course will focus on current issues related to marketing in a high technology environment, relationship marketing, channel design and strategy, transportation, and logistics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MKT575 - ADVANCED MARKETING SEMINAR

## **MKT480 - MARKETING MANAGEMENT**

### **Long Course Title**

MARKETING MANAGEMENT

### **Course Description**

Study of management of marketing function. Addresses setting objectives, organization and control of marketing resources in coordination with other functional areas, identification and selection of market opportunities, competitive strategies, and development of marketing policies and programs.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

### **Cross-Listed Course**

MKT580 - MARKETING MANAGEMENT

## **MKT490 - SPECIAL PROJECTS**

### **Course Description**

Independent study in an area of interest to the student in the field of marketing.

### **Credits**

1 - 3

### **Prerequisites**

- Department Chair Permission Required

### **Cross-Listed Course**

MKT590 - SPECIAL PROJECTS

**MKT494 - PRACTICUM IN MARKETING****Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - MSC287 - BUSINESS STATISTICS I (3)
  - MSC288 - BUSINESS STATISTICS II (3)

**Equivalent Course(s)**

MGT494 - PRACTICUM IN MANAGEMENT

**MKT495 - INTERN IN MARKETING****Long Course Title**

INTERNSHIP IN MARKETING

**Course Description**

Active involvement in an project in a business enterprise, professional organization or in a government agency that has particular interest and relevance to the student. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis. Subject to College's guidelines on internships.

**Credits**

1 - 3

**Prerequisites**

- Must have a class standing of Senior

**MKT505 - NEW VENTURE STRATEGIES****Course Description**

Theory and application of both marketing and management strategies for start-up, operation and control of new ventures. The course also discusses the role of entrepreneurship in the economy

**Credits**

3

**Cross-Listed Course**

MKT405 - NEW VENTURE STRATEGIES

**MKT515 - INTERNATIONAL MARKETING****Long Course Title**

INTERNATIONAL MARKETING

**Course Description**

Procedures and problems associated with establishing and carrying out marketing operations in or with foreign countries and companies. Institutions, principles, and methods involved in solving these business problems. Effect of national differences in business practices and regulation.

**Credits**

3

**Cross-Listed Course**

MKT415 - INTERNATIONAL MARKETING

**MKT520 - SERVICES MARKETING****Long Course Title**

SERVICES MARKETING

**Course Description**

The course focuses on the unique challenges of managing services and delivering quality service to customers. The course is equally applicable to organizations whose core product is services (e.g., banks, hospitals, aerospace and defense firms, non-profit organizations) and to organizations that depend on service excellence and services for competitive advantage (high technology firms, industrial firms).

**Credits**

3

**Cross-Listed Course**

MKT420 - SERVICES MARKETING

**MKT565 - MARKETING FOR NEW VENTURES****Course Description**

It is the intent of this course to create teams of students who will take a technology to the next level with the potential for the creation of a venture team. The course will take students through the process of conceiving and creating a new business. The goal is to provide a solid background with practical applications of important concepts for non-business majors or business majors with limited or no experience in an entrepreneurial environment. Finance, accounting, marketing and management will be addressed from a hands-on, entrepreneurial perspective. The course will rely on Podcast discussion, participation, case analysis, and the creation of a business plan.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MKT604 - NEW PRODUCT DEVELOPMENT (3)
  - MGT505 - NEW VENTURES STRATEGIES (3)

**Cross-Listed Course**

MKT465 - MARKETING FOR NEW VENTURES

## **MKT570 - SOCIAL MEDIA MARKETING**

### **Long Course Title**

SOCIAL MEDIA MARKETING

### **Course Description**

The course focuses on how to meet the challenge of brand building in a digital age. It aims to foster the students' acquisition of social media marketing skills, equipping them with relevant knowledge of how to incorporate social media into marketing strategy thus enhancing value to both companies and customers. As future marketers, students will learn how to adopt a customer centric approach to their future marketing tasks, and be guided through a number of hands-on assignments that are immediately applicable to marketing practices.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MKT601 - MARKETING STRATEGY & ANALYSIS (3)

### **Cross-Listed Course**

MKT470 - SOCIAL MEDIA MARKETING

## **MKT572 - DIGITAL MARKETING**

### **Long Course Title**

DIGITAL MARKETING

### **Course Description**

Digital marketing has become an essential component of any firms marketing strategy. This course conducts an in-depth study of display advertising, search optimization and social media marketing, at both the tactical and strategic levels. Focus will be on outcome and effectiveness measurement methods and campaign evaluation metrics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MKT601 - MARKETING STRATEGY & ANALYSIS (3)

### **Cross-Listed Course**

MKT472 - DIGITAL MARKETING

**MKT575 - ADVANCED MARKETING SEMINAR****Long Course Title**

ADVANCED MARKETING SEMINAR

**Course Description**

Investigation of advanced marketing topics that are relevant to contemporary marketing practices. The course will focus on current issues related to marketing in a high technology environment, relationship marketing, channel design and strategy, transportation, and logistics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MKT600 - SURVEY OF MARKETING MGMT (3)

**Cross-Listed Course**

MKT475 - ADVANCED MARKETING SEMINAR

**MKT580 - MARKETING MANAGEMENT****Course Description**

Management of marketing function of the firm: determination of objectives, organization and controls for effective utilization of marketing resources in coordinated effort with other major functional areas. Identification and selection of market opportunities. Competitive strategies and development of marketing policies and programs.

**Credits**

3

**Cross-Listed Course**

MKT480 - MARKETING MANAGEMENT

**MKT590 - SPECIAL PROJECTS****Long Course Title**

SPECIAL PROJECTS

**Course Description**

Independent study in an area of interest to the student in the field of marketing.

**Credits**

3

**Cross-Listed Course**

MKT490 - SPECIAL PROJECTS

**MKT595 - INTERNSHIP IN MARKETING****Course Description**

Active involvement in a project in a business enterprise, professional organization, or in a government agency that has particular interest and relevance to the student.

**Credits**

3

**MKT600 - SURVEY OF MARKETING MGMT****Long Course Title**

SURVEY OF MARKETING MANAGEMENT

**Course Description**

Seminar format with case analysis is used to introduce students to the tools and concepts necessary for planning, organizing, and controlling marketing activities. Typical topics include market analysis and segmentation, market planning, market research, and product pricing, promotion, and distribution strategies.

**Credits**

3

**MKT601 - MARKETING STRATEGY & ANALYSIS****Long Course Title**

MARKETING STRATEGY & ANALYSIS

**Course Description**

A seminar format with case analysis is used to introduce students to the tools and concepts necessary for planning, organizing and controlling marketing activities. Typical topics include market analysis and segmentation, market planning, market research, product, pricing, promotion and distribution strategies.

**Credits**

3

**MKT602 - MARKETING RESEARCH DESIGN****Course Description**

Application based course exploring the principles and purposes of marketing research. Covers research design, questionnaire development, sample selection, data collection, data analysis, and report generation. Focus is on the gathering and use of information for better decision-making.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MKT601 - MARKETING STRATEGY & ANALYSIS (3)

**MKT604 - NEW PRODUCT DEVELOPMENT****Course Description**

Practical management of new product development methods and techniques from current research and successful industrial practice. An in-depth review of concepts, empirical findings, and paradigms that collectively form the foundation for the design and marketing of new products. An overview of emerging concepts, analytical techniques, empirical findings and paradigms that alter the nature, scope, and practice of marketing emerging technologies.

**Credits**

3

**MKT606 - MKT IN HIGH TECH ENVIRON****Long Course Title**

MARKETING IN HIGH TECHNOLOGY ENVIRONMENTS

**Course Description**

Investigation of the many functions, strategies, systems, environmental forces, and competitive activities involved in the marketing of ideas, goods, and services to organizational customers which include businesses, industries, institutions, and governments. These issues will be evaluated within the context of a high technology environment. Using a seminar format, case analysis and class participation will be important dimensions of the course.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MKT604 - NEW PRODUCT DEVELOPMENT (3)

**MKT650 - SELECTED RESEARCH TOPICS****Long Course Title**

SELECTED RESEARCH TOPICS

**Course Description**

Research on a particular topic relevant to marketing by one student or a group of students. The research paper must be an original contribution showing a research design and results that meet the highest standards of social science research.

**Credits**

3

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## Materials Science

**MTS601 - NATURE OF MATERIALS****Course Description**

Fundamental chemistry and structure of metals, ceramics, semiconductors, and polymers. Mol%, wt%, ppx, number densities, and polymer molecular weights. Covalent, ionic, metallic, and intermolecular bonding. Crystallography and disorder. Point, line, and volume defects. Phase diagrams.

**Credits**

3

## **MTS602 - PROPERTIES OF MATERIALS**

### **Long Course Title**

PROPERTIES OF MATERIALS

### **Course Description**

Properties of metals, ceramics, semiconductors, and polymers. Elastic or plastic deformation, fracture, and strengthening. Oxidation and corrosion. Dielectrics, semiconductors, and conductors. Thermal conductivity and heat capacity. Transmission, adsorption, and reflection. Magnetic susceptibility.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MTS601 - NATURE OF MATERIALS (3)

## **MTS603 - STRUC COMP PROP MATLS I**

### **Long Course Title**

STRUCTURE, COMPOSITION, AND PROPERTIES OF MATERIALS I

### **Course Description**

How structure and composition determine a materials mechanical properties and performance. Topics covered include bonding and crystal structure, disorder, defects, phase diagrams, phase transitions, diffusion and other kinetic processes, deformation, fraction mechanics, strengthening processes as applied to metals, ceramics, semiconductors, polymers and composites.

### **Credits**

3

## **MTS604 - STRUC COMP PROP MATLS II**

### **Long Course Title**

STRUCTURE, COMPOSITION, AND PROPERTIES OF MATERIALS II

### **Course Description**

How reactive, electronic, magnetic, thermal and optical properties of metals, ceramics, semiconductors, and polymers are influenced by their structure and composition. Topics considered include corrosion, oxidation, degradation process, band structure, electrical and optical dielectric constants, magnetic susceptibility, electrical and thermal conductivity and superconductivity.

### **Credits**

3

## **MTS607 - MAT PROCESSING IN SPACE**

### **Course Description**

Extensive review of solidification physics with emphasis on the role of fluid transport and its effects on the process in order to develop rationales for processing materials in space.

### **Credits**

3



**MTS613 - SYNTHESIS & PROC OF MATL****Course Description**

Metals, semiconductors, polymers, ceramics and composite materials are included.

**Credits**

3

**MTS646 - THERMODYNAMICS OF MATRLS****Course Description**

Fundamental thermodynamic review, phase equilibrium, chemical reaction equilibrium, free energy, binary and ternary phase transformations, solution models and selected topics.

**Credits**

3

**Equivalent Course(s)**

CH646 - THERMODYNAMICS OF MATRLS  
CHE646 - THERMODYNAMICS OF MATRLS

**MTS649 - POLYMER SYNTHESIS & CHARACTERI****Long Course Title**

POLYMER SYNTHESIS & CHARACTERIZATION

**Course Description**

Synthesis of commercially relevant and novel polymers. Polymer characterization and discussion of the structural dependence of polymer properties.

**Credits**

3

**MTS650 - PRINC LIQUID/SOLID INTER****Course Description**

Applies basic principles in thermodynamics and kinetics to characterize surfaces and surface phenomena. Fundamental properties of gas-liquid, liquid-liquid, solid-liquid, and solid-gas interfaces and phenomena occurring at these interfaces.

**Credits**

3

**Equivalent Course(s)**

CH650 - PRINC LIQUID/SOLID INTER  
CHE650 - PRINC LIQUID/SOLID INTER

## **MTS651 - INTRO QUANTUM MECH I**

### **Long Course Title**

INTRODUCTION TO QUANTUM MECHANICS I

### **Course Description**

Waves and particles; Bohr's model of the atom; de Broglie waves, wave-packets and the uncertainty principle; postulates of quantum mechanics; Schroedinger's equation; simple systems in one, two and three dimensions; the hydrogen atom.

### **Credits**

3

### **Equivalent Course(s)**

CH553 - INTRO QUANTUM MECH I

PH551 - QUANTUM MECHANICS I

## **MTS652 - INTRO QUANTUM MECH II**

### **Course Description**

Angular momentum and spin; atomic structure and spectrum; time-independent perturbation theory, variational methods; time-dependent perturbation theory and interactions of light with matter; scattering theory; electronic structure of solids; relativistic quantum mechanics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CH553 - INTRO QUANTUM MECH I (3)
  - PH551 - QUANTUM MECHANICS I (3)
  - MTS651 - INTRO QUANTUM MECH I (3)

### **Equivalent Course(s)**

CH554 - INTRO QUANTUM MECH II

## **MTS660 - INTRO SOLID ST PHY I**

### **Course Description**

Crystal binding and crystal structure. Crystal structure determination. Phonons and lattice vibrations. Free electron gas. Electronic energy band theory.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - 3 hours from:
    - PH551 - QUANTUM MECHANICS I (3)
    - CH553 - INTRO QUANTUM MECH I (3)
    - MTS651 - INTRO QUANTUM MECH I (3)
    - OSE555 - INTRO QUANTUM MECHANICS I (3)
  - Or by approval of the instructor

### **Equivalent Course(s)**

PH560 - INTRO TO SOLID STATE PHYSICS I

## **MTS661 - INTRO SOLID ST PHY II**

### **Course Description**

Thermal properties of solids. Electronic properties, optical properties, electronic properties in a magnetic field, semiconductor devices, magnetism, superconductivity, defects and alloys, dislocations and crystal growth, non-crystalline solids, surfaces and interfaces.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MTS660 - INTRO SOLID ST PHY I (3)
  - PH560 - INTRO TO SOLID STATE PHYSICS I (3)

### **Equivalent Course(s)**

PH561 - INTRO TO SOLID STATE PHYSIC II

## **MTS690 - SP TPS/MATERIAL SCIENCE**

### **Long Course Title**

SPECIAL TOPICS/MATERIAL SCIENCE

### **Course Description**

Advanced selected topics of interest in such areas as materials processing, properties, analysis and testing.

### **Credits**

1 - 4

## **MTS699 - MASTER'S THESIS**

### **Long Course Title**

MASTER'S THESIS

### **Course Description**

Required each semester that a student is enrolled and receiving direction on a master's thesis. Minimum of 6 credit hours required. The 0 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

### **Credits**

0 - 9

## **MTS701 - FUND SOLID ST MAT PREP I**

### **Course Description**

Equilibrium concepts and applications. Overview of solid state preparation (crystal growth) techniques. Treats appropriate thermodynamics, chemical equilibrium solid-liquid-vapor phase diagrams and application in materials preparation; segregation and applications (doping, normal freezing, zone refining, macro and micro distributions).

### **Credits**

3

**MTS721 - FUND ELECTRON/X-RAY OPTICS****Course Description**

Fundamentals of materials characterization using electron and x-ray techniques. Topics include advanced crystallography, electron optics, and interactions of energetic electrons with solids. Some applications of x-ray diffraction (SRD) will be addressed.

**Credits**

3

**MTS722 - ELECT MICROSCOPIES/X-RAY DIFF****Course Description**

Applications of materials characterization using electron and x-ray techniques. Topics include imaging and x-ray spectroscopy (EDXA) using scanning electron microscopy (SEM); imaging, diffraction, and x-ray spectroscopy using transmission electron microscopy (TEM); and advanced x-ray diffraction (XRD) techniques.

**Credits**

4

**MTS723 - ELECTRON SPECTROSC SUR CHAR****Course Description**

Principles and operation of electron spectroscopies used in surface characterization. Techniques covered include Auger electron spectroscopy (AES), x-ray photoelectron spectroscopy (XPS), and other photoemission spectroscopies, such as ultraviolet photoelectron spectroscopy (UPS) and the use of synchrotron radiation. Students will carry out analysis of samples, prepare a written report, and present the results orally as part of the laboratory assignment.

**Credits**

4

**MTS724 - INSTR METH/BIO-MTLS CHARACTERI****Credits**

3

**MTS747 - POLYMER PHYSICAL CHEM****Course Description**

Introduction to structure, properties and processing of polymers. Structural types, structure property relationships, thermodynamics and kinetics of polymerization and depolymerization, polymer characterization, thermodynamics of polymer solutions and blends, and mechanical evaluation of polymers.

**Credits**

3

**Equivalent Course(s)**

CH645 - POLYMER PHYSICAL CHEMISTRY

**MTS780 - MATERIALS SCIENCE SEMINAR****Long Course Title**

MATERIALS SCIENCE SEMINAR

**Course Description**

Required of doctoral students during each semester of residence. This course may not be used to meet minimum degree requirements.

**Credits**

1

**Equivalent Course(s)**

CH780 - CHEMISTRY SEMINAR

**MTS790 - SPECIAL TOPICS/MTS****Course Description**

Offered upon demand. Advanced selected topics of interest in materials science in such areas as materials processing, materials properties and analysis, testing.

**Credits**

3

**MTS799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester student is enrolled and receiving direction on a doctoral dissertation. The 0 hour option is only available to students who have successfully defended their dissertation and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 0 hour option once in their career.

**Credits**

0 - 9

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## Mathematics

**MA105 - NATURE OF MATHEMATICS****Long Course Title**

NATURE OF MATHEMATICS

**Course Description**

The course explores mathematical ideas that historically led to the development of major branches of mathematics. Conceptual understanding and real-world problem solving will be emphasized. Topics may include world of numbers, infinity, chance, foundations of statistics, and mathematical aesthetics. MA 105 cannot be used to fulfill prerequisite requirements for any mathematics course.

**Credits**

3

**Charger Foundations**

Area III: Mathematics

**MA106 - COLLEGE ALGEBRA****Long Course Title**

COLLEGE ALGEBRA

**Course Description**

Properties of real numbers and basic arithmetic: fractions, decimals, percentages, scientific notation. Solving linear, polynomial, and rational equations. Basics of functions and graphing of linear and polynomial functions. Systems of linear equations and inequalities. Graphing polynomial and rational inequalities. Basics of complex numbers. Solving quadratic equations, graphing quadratic function and inequalities. Prerequisite: Math Placement Level 0. Not open to students who have previously earned credit in MA 107, MA 112, MA 113, MA 171, related S-sections (or higher level courses).

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 0 (PLMA 0000)

**Restrictions**

Not open to students who have previously earned credit in MA 107, MA 112, MA 113, MA 171, related S-sections (or higher level courses).

**Charger Foundations**

Yes

**MA107 - ALGEBRA WITH APPLICATIONS****Long Course Title**

ALGEBRA WITH APPLICATIONS

**Course Description**

Algebra review, functions and graphs, linear models, exponential logarithmic functions, mathematics of finance, sets and probability.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 1 (PLMA 1000)

**Equivalent Course(s)**

MA107S - ALGEBRA W/APPLICATIONS S-SECT

**Charger Foundations**

Area III: Mathematics

**MA107S - ALGEBRA W/APPLICATIONS S-SECT****Long Course Title**

ALGEBRA WITH APPLICATIONS S-SECTION

**Course Description**

This course offers all of the Algebra with Applications curriculum with the addition of remedial material. This course is 3 credit hours, but meets 5 days per week. The S-section is intended for students with math placement 0.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 0 (PLMA 0000)

**Equivalent Course(s)**

MA107 - ALGEBRA WITH APPLICATIONS

**Charger Foundations**

Area III: Mathematics

**MA110 - FINITE MATHEMATICS****Long Course Title**

FINITE MATHEMATICS

**Course Description**

Algebra review, elementary functions, matrices, logic, sets, counting, and an introduction to probability and statistics. MA 110 is an AGSC core course.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 1 (PLMA 1000)

**Equivalent Course(s)**

MA110S - FINITE MATHEMATICS S-SECTION

**Charger Foundations**

Area III: Mathematics

**MA110S - FINITE MATHEMATICS S-SECTION****Long Course Title**

FINITE MATHEMATICS S-SECTION

**Course Description**

This course offers all of the Finite Mathematics curriculum with the addition of remedial material. This course is 3 credit hours, but meets 5 days per week. The S-section is intended for students with math placement 0.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 0 (PLMA 0000)

**Equivalent Course(s)**

MA110 - FINITE MATHEMATICS

**Charger Foundations**

Area III: Mathematics



**MA112 - PRECALCULUS ALGEBRA****Long Course Title**

PRECALCULUS ALGEBRA

**Course Description**

Real number systems, exponents, radicals, factoring, absolute value, inequalities, function notation, functions, inverse functions, graphing techniques, polynomial and rational functions, operations with complex numbers, conic sections, and theory of equations.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 1 (PLMA 1000)

**Equivalent Course(s)**

MA112S - PRECALCULUS ALGEBRA S-SECTION

**Charger Foundations**

Area III: Mathematics

**MA112S - PRECALCULUS ALGEBRA S-SECTION****Long Course Title**

PRECALCULUS ALGEBRA S-SECTION

**Course Description**

This course offers all of the Pre-Calculus Algebra curriculum with the addition of remedial material. This course is 3 credit hours, but meets 5 days per week. The S-section is intended for students with math placement 0.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Math Level 0 (PLMA 0000)

**Equivalent Course(s)**

MA112 - PRECALCULUS ALGEBRA

**Charger Foundations**

Area III: Mathematics

## **MA113 - PRECALCULUS TRIGONOMETRY**

### **Course Description**

Exponential and logarithmic functions, trigonometric functions of angles and real numbers, graphing trigonometric functions, inverse trigonometric functions, solving trigonometric equations, verifying identities, laws of sines and cosines, vectors, trigonometric form of complex numbers, DeMoivre's theorem, summation notation, arithmetic and geometric sequences and series.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 2 (PLMA 2000)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)

### **Charger Foundations**

Area III: Mathematics

## **MA115 - PRECALCULUS ALGEBRA & TRIG**

### **Long Course Title**

PRECALCULUS ALGEBRA & TRIGONOMETRY

### **Course Description**

The algebra of functions, including polynomial, rational, exponential, and logarithmic functions; systems of equations and inequalities; trigonometric and inverse trigonometric functions; trigonometric identities and equations; a brief introduction to DeMoivre's Theorem, vectors, polar coordinates, and the binomial theorem. This course is intended for students who plan to take at least MA 171 (Calculus A) but who do not need the full two-semester sequence in precalculus (MA 112, 113). MA 115 is an AGSC core course.

### **Credits**

4

### **Prerequisites**

- Student must have the following placement: Math Level 2 (PLMA 2000)

### **Charger Foundations**

Area III: Mathematics

**MA120 - MATH PROFESSIONAL APPLICATIONS****Long Course Title**

MATH PROFESSIONAL APPLICATIONS

**Course Description**

Limits, continuity, differentiation, applications of the derivative, integration, the fundamental theorem of calculus, applications of the integral.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 2 (PLMA 2000)
  - Student must have the following placement: Math Level 3 (PLMA 3000)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)

**Charger Foundations**

Area III: Mathematics

**MA150 - CALCULUS I WITH FOUNDATIONS A****Long Course Title**

CALCULUS I WITH FOUNDATIONS A

**Course Description**

MA 150 and MA 151 form a two-semester sequence that integrates first-semester Calculus with Precalculus. This first semester includes a review of functions, including polynomial and rational functions, limits, differentiation of algebraic functions, and applications of derivatives .

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 1 (PLMA 1000)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
    - MA106 - COLLEGE ALGEBRA (3)

**Charger Foundations**

Yes

**MA151 - CALCULUS I WITH FOUNDATIONS B****Long Course Title**

CALCULUS I WITH FOUNDATIONS B

**Course Description**

MA 150 and MA 151 form a two-semester sequence that integrates first-semester Calculus with Precalculus. This second course in the sequence begins with a review of exponential, logarithmic, and trigonometric functions. The topics of limits and derivatives of transcendental functions are introduced. Finally, integral calculus is studied in the context of both algebraic and transcendental functions. Completion of the MA 150-151 sequence is equivalent to completion of MA 171.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA150 - CALCULUS I WITH FOUNDATIONS A (3)

**Equivalent Course(s)****Charger Foundations**

Yes

**MA171 - CALCULUS I****Long Course Title**

CALCULUS I

**Course Description**

Limits, derivatives, applications of the derivative, definite and indefinite integrals, exponential and logarithmic functions, and inverse functions.

**Credits**

4

**Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 3 (PLMA 3000)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)

**Equivalent Course(s)**

MA171S - CALCULUS I S-SECTION

**Charger Foundations**

Area III: Mathematics

## **MA171R - CALCULUS A RECITATION**

### **Course Description**

Extension of MA 171. Review of previous math skills needed for success. Homework discussed; examination preparation, review of homework and examination tutoring and individual consultation.

### **Credits**

0

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - MA171 - CALCULUS I (4)
  - MA171S - CALCULUS I S-SECTION (4)

## **MA171S - CALCULUS I S-SECTION**

### **Long Course Title**

CALCULUS I S-SECTION

### **Course Description**

This course offers all of the Calculus A curriculum with the addition of trigonometry review. The course is 4 credit hours but meets five days per week. The S-section of Calculus A is intended for students with math placement level 2 but who are willing to put in extra time and effort to study trigonometry along with all of the requirements for MA 171.

### **Credits**

4

### **Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 2 (PLMA 2000)
  - Earn a minimum grade of C- in all of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)

### **Equivalent Course(s)**

MA171 - CALCULUS I

### **Charger Foundations**

Area III: Mathematics

## **MA172 - CALCULUS II**

### **Course Description**

Techniques of integration, applications of the integral, polar coordinates, sequences, series, and conic sections.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - MA171 - CALCULUS I (4)
  - MA171S - CALCULUS I S-SECTION (4)

## **MA181 - INTRODUCTION TO STATISTICS**

### **Long Course Title**

INTRODUCTION TO STATISTICS

### **Course Description**

The course is designed to provide an introduction to qualitative and quantitative statistics for research methods. The course also utilizes lab activities to instill in students working knowledge of Excel and other software statistics programs.

### **Credits**

3

### **Charger Foundations**

Area III: Mathematics

## **MA201 - CALCULUS III**

### **Long Course Title**

CALCULUS III

### **Course Description**

Vectors, vector-valued functions, partial derivatives, multiple integrals, vector fields, line and surface integrals.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA172 - CALCULUS II (4)

## **MA230 - MATH FOR ELEMENTARY TEACHERS**

### **Long Course Title**

MATH FOR ELEMENTARY TEACHERS

### **Course Description**

The course emphasizes the use of logical thinking in mathematics and the development of students' understandings of algorithm design. Directed at providing the elementary education student the mathematical background necessary for an understanding of the mathematical principles that are introduced to children in the elementary grades. Emphasis on sets, logic, an understanding of the number systems (integers, fractions, decimals, percents) and number theory.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BS ECSE, or BA ELEM EDUC
  - Earn a minimum grade of C- in at least 2 of the following:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
    - MA110 - FINITE MATHEMATICS (3)
    - MA110S - FINITE MATHEMATICS S-SECTION (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)

**MA231 - MATH FOR ELEM SCH TCHERS II****Long Course Title**

MATH FOR ELEMENTARY SCHOOL TEACHERS II

**Course Description**

Rational numbers, real numbers, algebra, statistics, probability, geometric shapes, measurement, and geometry (using triangle congruence and similarity, coordinates, and transformations).

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: BS ECSE, or BA ELEM EDUC
  - Earn a minimum grade of C- in all of the following:
    - MA230 - MATH FOR ELEMENTARY TEACHERS (3)

**MA238 - APPL DIFFERENTIAL EQUATIONS****Long Course Title**

APPLIED DIFFERENTIAL EQUATIONS

**Course Description**

This course provides an elementary introduction to the techniques and necessary theory for solving the basic differential equations usually encountered by beginning science and engineering students. General topics include analytical and graphical methods for solving and analyzing first order differential equations; Euler's numerical method; the basic theory of higher-order, linear differential equations, with major emphasis on equations with constant coefficients; variation of parameters; the Laplace transform as a tool for solving differential equations. MA 238 is an AGSC core course.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA172 - CALCULUS II (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)

**MA244 - INTRO TO LINEAR ALGEBRA****Long Course Title**

INTRODUCTION TO LINEAR ALGEBRA

**Course Description**

Systems of linear equations, matrices, matrix operations, determinants, vector spaces, bases, dimension of a vector space, inner product, Gram-Schmidt process, linear transformations, change of basis, similar matrices, eigenvalues and eigenvectors, diagonalization, symmetric matrices, and applications.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA172 - CALCULUS II (4)

**MA281 - ELEMENTS OF STATISTICAL ANALYSIS****Long Course Title**

ELEMENTS OF STATISTICAL ANALYSIS

**Course Description**

Descriptive statistics, fundamentals of probability theory, fundamentals of statistical inference, including estimation and hypothesis testing, and use of a typical statistical package such as MINITAB.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 2 (PLMA 2000)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
    - MA181 - INTRODUCTION TO STATISTICS (3)

**Equivalent Course(s)**

ST281 - ELEMENTS OF STAT ANALYSIS

**MA299 - MATHEMATICS PROJECT****Course Description**

Individualized special projects in mathematics and its applications for inquisitive and well prepared sophomore-level undergraduate students. No credit allowed toward major or minor in mathematics. S/U grading.

**Credits**

1



## **MA301 - INTRO ELEMENTARY NUMBER THEORY**

### **Long Course Title**

INTRODUCTION TO ELEMENTARY NUMBER THEORY

### **Course Description**

Fundamental properties of integers, divisibility, linear Diophantine equations, congruency, Euler function, Chinese Remainder Theorem, Fermat Theorems, Wilson Theorem, and applications to Cryptography.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **MA330 - FOUNDATIONS OF MATH**

### **Course Description**

Symbolic logic and methods of proof, set theory, combinations and permutations, equivalence relations and functions, mathematical induction and recurrence relations, cardinality (finite, countably infinite, and uncountable sets), and decimal representation of the rational and real numbers.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA172 - CALCULUS II (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **MA385 - INTRO TO PROBABILITY & STATIST**

### **Long Course Title**

INTRODUCTION TO PROBABILITY AND STATISTICS

### **Course Description**

This course is a calculus-based introduction to probability with special emphasis on the interplay between probability and statistics. Topics include descriptive statistics; probability spaces; discrete distributions (including the binomial, geometric, hypergeometric, and Poisson); continuous distributions (including the uniform, exponential, and normal); joint distributions; mean, variance, and general expected value; independence and correlation; the law of large numbers; and the central limit theorem.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA201 - CALCULUS III (4)

**MA399 - MATHEMATICS PROJECT****Long Course Title**

MATHEMATICS PROJECT

**Course Description**

Individualized special projects in mathematics and its applications for inquisitive and well prepared junior-level undergraduate students. No credit allowed toward a major or minor in mathematics. S/U grading.

**Credits**

1

**MA415 - INTRO NUMERICAL METHODS****Long Course Title**

INTRODUCTION TO NUMERICAL METHODS

**Course Description**

Derivation and analysis of approximate methods for the solution of nonlinear equations, interpolation and integration of functions, and techniques for the solution of systems of linear equations and for approximating solutions of elementary differential equations. Emphasis is placed on obtaining an intuitive understanding of both the problem at hand and the numerical method used to solve it.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CS121 - COMPUTER SCIENCE I (3)
  - MA201 - CALCULUS III (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

**MA420 - INTERM DIFFERENTIAL EQUATIONS****Course Description**

This is a second course in differential equations. Course topics include series solutions for second order differential equations and the method of Frobenius; eigenvalue and eigenvector methods for solving systems of linear first order equations; the qualitative theory of nonlinear equations; boundary value problems and the Sturm-Liouville theory.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

**Cross-Listed Course**

MA520 - INTERM DIFFERENTIAL EQUATIONS

## **MA433 - INTRODUCTION TO GEOMETRY**

### **Course Description**

Axiomatic development of geometry, introduction to non-Euclidean geometries with emphasis in elliptic and hyperbolic geometries, selected topics in Euclidean geometry.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA172 - CALCULUS II (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA201 - CALCULUS III (4)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **MA442 - ALGEBRAIC STRUCTURES W/APPLIC**

### **Long Course Title**

ALGEBRAIC STRUCTURES WITH APPLICATIONS

### **Course Description**

Mappings, binary operations, equivalence relations, groups and subgroups, Lagrange's theorem, homomorphisms and isomorphisms, normal subgroups and quotient groups, rings, fields, ordered integral domains, fields of quotients, error correcting codes, linear codes, and decoding.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA330 - FOUNDATIONS OF MATH (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)

**MA450 - COMBINATORIAL ENUMERATION****Long Course Title**

COMBINATORIAL ENUMERATION

**Course Description**

Counting, pigeonhole principle, permutations and combinations, generating functions, principle of inclusion and exclusion, Polya's theory of counting.

**Credits**

3

**Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)

**MA452 - INTRO TO REAL ANALYSIS****Long Course Title**

INTRODUCTION TO REAL ANALYSIS

**Course Description**

Sequences, limits, continuity, differentiation of functions of one real variable, Riemann integration, uniform convergence, sequences and series of functions, power series, and Taylor series.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA330 - FOUNDATIONS OF MATH (3)

**Cross-Listed Course**

MA502 - INTRO TO REAL ANALYSIS

**MA453 - INTRO TO COMPLEX ANALYSIS****Long Course Title**

INTRODUCTION TO COMPLEX ANALYSIS

**Course Description**

Complex algebra, analytic functions, Cauchy-Riemann equations, exponential, trigonometric, and logarithmic functions, integration, Cauchy integral theorem, Morera's theorem, Liouville's theorem, maximum modulus theorem, residue theory, Taylor and Laurent series, and applications.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
  - 3 hours from any MA 300 - 799 level course(s)

**Cross-Listed Course**

MA503 - INTRO COMPLEX ANALYSIS

**MA456 - METHODS OF PARTIAL DIFF EQUA****Long Course Title**

METHODS OF PARTIAL DIFFERENTIAL EQUATIONS

**Course Description**

Survey of theory and methods for solving elementary partial differential equations. Topics include first-order equations and the method of characteristics, second-order equations, reduction to canonical form, the wave equation, the heat equation, Laplace's equation, separation of variables, and Fourier series.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **MA458 - APPLIED LINEAR ALGEBRA**

### **Course Description**

Fundamental concepts of linear algebra are developed with emphasis on real and complex vector spaces, linear transformations, and matrices. Systems of equations, inverses of matrices, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, normal matrices, canonical forms of matrices, applications of systems of linear differential equations, and use of computer software such as MATLAB.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

### **Cross-Listed Course**

MA508 - APPLIED LINEAR ALGEBRA

## **MA460 - INTRO FOURIER ANALYSIS**

### **Long Course Title**

INTRODUCTION TO FOURIER ANALYSIS

### **Course Description**

Brief development of trigonometric and exponential Fourier series, derivation of the classical Fourier transform from series, classical properties of Fourier transforms, transforms of functions, convolution, elementary development of the delta function, transforms of periodic functions, use of transforms to solve systems, introduction to the discrete transform and/or multidimensional transforms, as time permits.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **MA465 - INTRO TO MATH MODELING**

### **Long Course Title**

INTRODUCTION TO MATH MODELING

### **Course Description**

Applying mathematics by formulating, analyzing, and criticizing mathematical models of various phenomena. Examples will be chosen from the physical, biological, and social sciences. Emphasizes development and use of simple mathematical models by having student study general modeling principles and case studies (some open-ended) drawn from various sources.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

**MA471 - INTRO TO CRYPTOGRAPHY****Long Course Title**

INTRODUCTION TO CRYPTOGRAPHY

**Course Description**

Classical cryptology, block and stream ciphers. Selected topics from number theory. Public-key versus symmetric cryptography, one-way and trap-door functions. RSA system and factoring, other public-key cryptosystems (ELGamal, elliptic curves, lattice methods) and applications. Signature schemes.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - CS121 - COMPUTER SCIENCE I (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - 3 hours from any MA 300 - 400 level course(s)

**Cross-Listed Course**

- INTRODUCTION TO CRYPTOGRAPHY

**Charger Foundations**

N/A

**MA477 - CODING THEORY****Long Course Title**

INTRODUCTION TO CODING THEORY

**Course Description**

Coding and capacity. Error detection and correction. Hamming codes, cyclic codes, BCH codes, Reed-Solomon codes. Low-density parity-check codes: representations and constructions. Decoding algorithms.

**Credits**

3

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)

**Cross-Listed Course**

MA577 - CODING THEORY

**MA487 - INTRO TO MATH STATISTICS****Long Course Title**

INTRODUCTION TO MATH STATISTICS

**Course Description**

This is an introductory, calculus-based course in mathematical statistics. Topics include a review of basic probability, including probability spaces, independence, distributions and expected value; the fundamental theorems of probability, including the law of large numbers and the central limit theorem; estimation, including point estimation and interval estimates for means, variances, and proportions; hypothesis testing, including tests for means, variance, and goodness of fit; an introduction to correlation and regression; theory of inference, including sufficiency and power.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)

**Equivalent Course(s)**

ST487 - INTRO TO MATH STATISTICS

**MA490 - SEL TOP UNDERGRAD MATH****Long Course Title**

SELECTED TOPICS UNDERGRADUATE MATHEMATICS

**Course Description**

Requested undergraduate topics.

**Credits**

1 - 3

**Prerequisites**

- Instructor Permission Required

**MA499 - MATHEMATICS PROJECT****Course Description**

Individualized special projects in mathematics and its applications for superior undergraduate students. No credit is allowed toward a major or minor in mathematics. S/U grading.

**Credits**

1



**MA502 - INTRO TO REAL ANALYSIS****Long Course Title**

INTRODUCTION TO REAL ANALYSIS

**Course Description**

Sequences, limits, continuity, differentiation of functions of one real variable, Riemann integration, uniform convergence, sequences and series of functions, power series, and Taylor series.

**Credits**

3

**Cross-Listed Course**

MA452 - INTRO TO REAL ANALYSIS

**MA503 - INTRO COMPLEX ANALYSIS****Long Course Title**

INTRODUCTION TO COMPLEX ANALYSIS

**Course Description**

Complex algebra, analytic functions, Cauchy-Riemann equations, exponential, trigonometric, and logarithmic functions, integration, Cauchy integral theorem, Morera's theorem, Liouville's theorem, maximum modulus theorem, residue theory, Taylor and Laurent series, and applications.

**Credits**

3

**MA506 - METHODS PARTIAL DIFF EQUA****Long Course Title**

METHODS PARTIAL DIFFERENTIAL EQUATIONS

**Course Description**

Survey of theory and methods for solving elementary partial differential equations. Topics include first-order equations and the method of characteristics, second-order equations, reduction to canonical form, the wave equation, the heat equation, Laplace's equation, separation of variables, and Fourier series.

**Credits**

3

**MA508 - APPLIED LINEAR ALGEBRA****Course Description**

Fundamental concepts of linear algebra are developed with emphasis on real and complex vector spaces, linear transformations, and matrices. Solving systems of equations, finding inverses of matrices, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, normal matrices, canonical forms of matrices, applications to systems of linear differential equations, and use of computer software such as MATLAB.

**Credits**

3

**MA515 - INTRO NUMERICAL ANALYSIS****Long Course Title**

INTRODUCTION TO NUMERICAL ANALYSIS

**Course Description**

Rigorous analysis and derivation of numerical methods for the approximate solution of nonlinear equations; interpolation and integration of functions, and approximating solutions of ordinary differential equations.

**Credits**

3

**MA520 - INTERM DIFFERENTIAL EQUATIONS****Long Course Title**

INTERMEDIATE DIFFERENTIAL EQUATIONS

**Course Description**

This is a second course in differential equations. Course topics include series solutions for second order differential equations and the method of Frobenius; eigenvalue and eigenvector methods for solving systems of linear first order equations; the qualitative theory of nonlinear equations; boundary value problems and the Sturm-Liouville theory. No credit given to students who have successfully completed MA 524.

**Credits**

3

**MA524 - DYNAMICAL SYSTEMS I****Course Description**

Scalar autonomous equations; existence, uniqueness, stability, elementary bifurcations; planar autonomous equations; general properties and geometry, conservative systems, elementary bifurcations linear systems, reduction to canonical forms, stability and instability from linearization. Liapunov functions, center manifolds, Hopf bifurcation.

**Credits**

3

**MA526 - PARTIAL DIFF EQUA I****Long Course Title**

PARTIAL DIFFERENTIAL EQUATIONS I

**Course Description**

Introduction to the theory for solving partial differential equations. No graduate credit given to students who have completed MA 506 for graduate credit. Topics include second-order equations, reduction to canonical form, well-posedness, the classical equations (wave, heat, and Laplace's) in one and several dimensions, separation of variables, Fourier series, general eigenfunction expansions, Sturm-Liouville theory, first-order linear and quasilinear equations, and shocks.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA502 - INTRO TO REAL ANALYSIS (3)

**MA536 - INTRO P-ADIC ANALYSIS****Long Course Title**

INTRODUCTION TO P-ADIC ANALYSIS

**Course Description**

Introduction to p-adic analysis. Topics include rings; fields, ideals, congruences, valued fields, non-archimedean valued fields, field of p-adic numbers, field of complex p-adic numbers, ultrametric Banach spaces, p-adic Hilbert space, p-adic functions, strictly differentiable functions, Volkenborn Integral, Benoulli numbers, p-adic Gamma function, p-adic Riemann function, and p-adic Zeta function.

**Credits**

3

**MA538 - METRIC SPACES W/APPLICA****Long Course Title**

METRIC SPACES WITH APPLICATIONS

**Course Description**

Metric spaces, continuous functions, compactness, connectedness, completeness, Arzela-Ascoli theorem, Stone-Weierstrass theorem, Hilbert spaces, contraction mappings, applications to existence and uniqueness of solutions of differential and integral equations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA502 - INTRO TO REAL ANALYSIS (3)

**MA539 - MULTIDIMENSIONAL ANALYSIS****Course Description**

Finite-dimensional Euclidean space and sequential approach to its topology, continuous functions and their properties, differentiability and implicit function theorem, Riemann integral, elements of vector calculus, flows and their generating vector fields, introduction to metric spaces.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - MA544 - LINEAR ALGEBRA (3)

**MA540 - COMBINATORIAL ENUMERATION****Course Description**

Counting, pigeonhole principle, permutations and combinations, generating functions, principle of inclusion and exclusion. Polya's theory of counting.

**Credits**

3

**MA542 - ALGEBRA**  
**Course Description**

Topics from group theory and ring theory: subgroups, normal subgroups, quotient groups, homomorphisms, isomorphism theorems, ideals, principal ideal domains, Euclidean domains, fields, extension fields, elements of Galois theory.

**Credits**

3

**MA544 - LINEAR ALGEBRA**  
**Course Description**

Vector spaces over a field, bases, linear transformations, matrices, determinants, eigenvalues, similarity, Jordan canonical forms, dual spaces, orthogonal and unitary transformations.

**Credits**

3

**MA562 - INTERMEDIATE FOURIER ANALYSIS**  
**Course Description**

(Formerly MA 560). Brief review of classical Fourier analysis, Parseval's equality, Gaussian test functions. Introduction to generalized functions, the generalized transform, the generalized derivative, sequences and series of generalized functions, regular periodic arrays of delta functions, sampling, the discrete transform, the fast Fourier transform (other topics as time and interest permit).

**Credits**

3

**MA565 - INTERM MATH MODELING**  
**Long Course Title**

INTERMEDIATE MATH MODELING

**Course Description**

Designed for beginning graduate students. No prior experience in formal mathematical modeling is required. In-depth discussion of some types of models from physics, the life sciences, and/or the social sciences, with formulation, analysis, and criticism of the models. Process of and factors involved in formulating a model is of prime importance. Content is divided into approximately one-half deterministic modeling and one-half stochastic modeling.

**Credits**

3

**MA577 - CODING THEORY****Long Course Title**

INTRODUCTION TO CODING THEORY

**Course Description**

Coding and capacity. Error detection and correction. Hamming codes, cyclic codes, BCH codes, Reed-Solomon codes. Low-density parity-check codes: representations and constructions. Decoding algorithms.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of C or concurrently enrolled in all of the following:
    - MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
  - Equivalency will be considered for similar courses taken at academic institutions other than UAH

**Cross-Listed Course**

MA477 - CODING THEORY

**MA585 - PROBABILITY****Long Course Title**

PROBABILITY

**Course Description**

Course topics include probability spaces, random variables, conditional probability, independence, modes of convergence, and an introduction to sigma-algebras and measurability; distributions, including discrete, continuous, joint and marginal distributions, transformations of random variable, distribution and quantile functions, and convergence in distribution; expected value, including properties of general expected value, mean, variance, covariance, generating functions, and conditional expected value; special models and distributions, including Bernoulli trials and the binomial and negative binomial distributions, the Poisson model and the Poisson and gamma distributions, the normal distribution, finite sampling models and the hypergeometric distribution; the law of large numbers and the central limit theorem.

**Credits**

3

**MA590 - SELECTED TOPICS IN MATH****Long Course Title**

SELECTED TOPICS IN MATHEMATICS

**Course Description**

Requested selected topics.

**Credits**

3

## **MA607 - MATHEMATICAL METHODS I**

### **Course Description**

Review of vector calculus and coordinate systems, introduction to tensors, matrices, infinite series, complex variables with applications to calculus of residues, partial differential equations, and Sturm-Liouville theory. Orthogonal functions, gamma functions, Bessel functions, Legendre functions, special functions, Fourier series, integral transform and equations.

### **Credits**

3

### **Equivalent Course(s)**

PH607 - MATHEMATICAL METHODS I

## **MA609 - MATHEMATICAL METHODS II**

### **Course Description**

Continuation of MA 607.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA607 - MATHEMATICAL METHODS I (3)

### **Equivalent Course(s)**

PH609 - MATHEMATICAL METHODS II

## **MA614 - NUM METHODS/LINEAR ALGEBRA**

### **Long Course Title**

NUMBER METHODS/LINEAR ALGEBRA

### **Course Description**

Norms and vector spaces, matrix factorizations and direct solution methods, stability and conditioning, iterative methods for large linear systems, the algebraic eigenvalue problem.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA515 - INTRO NUMERICAL ANALYSIS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA508 - APPLIED LINEAR ALGEBRA (3)
    - MA544 - LINEAR ALGEBRA (3)

## **MA615 - NUM METHODS PARTIAL DIFF EQ**

### **Long Course Title**

NUMBER METHODS PARTIAL DIFFERENTIAL EQUATIONS

### **Course Description**

Finite difference methods for parabolic, elliptic, and hyperbolic partial differential equations, error analysis, stability, and convergence of finite difference methods.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA515 - INTRO NUMERICAL ANALYSIS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA506 - METHODS PARTIAL DIFF EQUA (3)
    - MA526 - PARTIAL DIFF EQUA I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA508 - APPLIED LINEAR ALGEBRA (3)
    - MA544 - LINEAR ALGEBRA (3)
    - MA614 - NUM METHODS/LINEAR ALGEBRA (3)

## **MA624 - DYNAMICAL SYSTEMS II**

### **Course Description**

Brief review of linear systems; local theory for nonlinear systems; existence, uniqueness, differentiability, asymptotic behavior, the stable manifold theorem, Hartman-Grobman theorem, Hamiltonian systems; global theory for nonlinear systems; limit sets and attractors, the Poincare map, the Poincare-Bendixson theorem; some aspects of bifurcation theory and chaos; bifurcations at nonhyperbolic fixed points and periodic orbits, homoclinic bifurcations, Melnikov's method, chaos.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA524 - DYNAMICAL SYSTEMS I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA508 - APPLIED LINEAR ALGEBRA (3)
    - MA544 - LINEAR ALGEBRA (3)

**MA626 - PARTIAL DIFF EQUA II****Long Course Title**

PARTIAL DIFFERENTIAL EQUATIONS II

**Course Description**

Continuation of MA 526. Qualitative results for solutions to the classical equations (energy inequalities, propagation of discontinuities, maximum principles, smoothness of solutions, existence and uniqueness, etc.), non-homogeneous equations, Poisson's equation, Green's functions, and the Cauchy-Kowalewski theorem.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA526 - PARTIAL DIFF EQUA I (3)

**MA633 - GEOMETRY****Course Description**

Axioms of incidence and order, affine and metric properties, isometries, similarities, transformation groups, projective planes.

**Credits**

3

**MA638 - GENERAL TOPOLOGY****Long Course Title**

GENERAL TOPOLOGY

**Course Description**

Set theory, logic, well-ordering principle, axiom of choice, topological spaces, product spaces, quotient spaces, continuous functions, connectedness, path connectedness, local connectedness, compactness, local compactness, countability and separation, generalized products, Tychonoff theorem.

**Credits**

3

**MA640 - GRAPH THEORY****Long Course Title**

GRAPH THEORY

**Course Description**

Graphs, subgraphs, trees, connectivity, Euler tours, Hamilton cycles, matchings, edge colorings, independent sets, vertex colorings, planar graphs, Kuratowski's theorem, four color theorem, directed graphs, networks, cycle, and bond spaces.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA540 - COMBINATORIAL ENUMERATION (3)
  - MA542 - ALGEBRA (3)



**MA643 - GROUP THEORY****Credits**

3

**MA644 - MATRIX THEORY****Long Course Title**

MATRIX THEORY

**Course Description**

Functions of matrices, invariant polynomials, elementary divisors, similarity of matrices, normal forms of a matrix, matrix equations, generalized inverses, non-negative matrices, localization of eigenvalues.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA508 - APPLIED LINEAR ALGEBRA (3)
  - MA503 - INTRO COMPLEX ANALYSIS (3)
  - MA544 - LINEAR ALGEBRA (3)

**MA645 - COMBINATORIAL DESIGN****Course Description**

Systems of distinct representatives, difference sets, coding theory, block designs, finite geometries, orthogonal Latin squares, and Hadamard matrices.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA540 - COMBINATORIAL ENUMERATION (3)
  - MA544 - LINEAR ALGEBRA (3)

**MA650 - THEORY OF DISTRIBUTIONS & FOURIER ANALYSIS****Long Course Title**

THEORY OF DISTRIBUTIONS & FOURIER ANALYSIS

**Course Description**

Topics include Hilbert spaces, convolution, regularization, Fourier series, Fourier transform, Fourier transform of the torus, Mellin transform, Hankel transform, Laplace transform, test functions, distributions, derivatives of distributions, elementary operations on distributions, convergence of distributions, fundamental solutions to partial differential equations such as the heat, wave, Schrodinger, and telegraph equations.

**Credits**

3

**MA653 - REAL ANALYSIS I****Course Description**

Countable sets, characterization of open and closed sets, Heine-Borel theorem, Riemann integral, Lebesgue measure and outer measure, measurable functions, Lebesgue integral, Fatou's lemma, and Lebesgue-dominated convergence theorem.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA538 - METRIC SPACES W/APPLICA (3)

**MA654 - REAL ANALYSIS II****Course Description**

Differentiability of monotone functions, functions of bounded variation, absolute continuity, convex functions, Minkowski and Holder inequalities,  $L_p$  spaces, Riesz-Fischer representation theorem, Fubini's theorem and selected topics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA653 - REAL ANALYSIS I (3)

**MA656 - COMPLEX ANALYSIS I****Long Course Title**

COMPLEX ANALYSIS I

**Course Description**

Topology of the complex plane, analytic functions of one complex variable, elementary functions and their mapping properties, power series, complex integration, Cauchy's theorem and its consequences, isolated singularities, Laurent series, residue theory.

**Credits**

3

**MA658 - INTRO TO FUNCTIONAL ANALYSIS****Long Course Title**

INTRODUCTION TO FUNCTIONAL ANALYSIS

**Course Description**

Normed and inner product spaces, finite dimensional spaces, product and quotient spaces, equivalent norms, Hahn-Banach theorem, principle of uniform boundedness, open mapping theorem, Riesz representation theorem, complete orthonormal sets, Bessel's inequality, Parseval's identity, and conjugate spaces.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA538 - METRIC SPACES W/APPLICA (3)

**MA661 - SPECIAL FUNCTIONS****Credits**

3

**MA662 - ASYMPT/PERTURBATION METHOD****Long Course Title**

ASYMPTOTIC/PERTURBATION METHOD

**Course Description**

Asymptotic series, regular and singular perturbation theory, asymptotic matching, Laplace's method, stationary phase, steepest descents, WKB theory.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA502 - INTRO TO REAL ANALYSIS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA503 - INTRO COMPLEX ANALYSIS (3)
    - MA624 - DYNAMICAL SYSTEMS II (3)

**MA667 - CALC VAR/OPTIMAL CONTROL****Long Course Title**

THE CALCULUS OF VARIATIONS AND OPTIMAL CONTROL

**Course Description**

Euler necessary condition for local extremum, Euler-Lagrange equation, Weierstrass necessary condition, Jacobi's necessary condition, corner conditions, problems of optimal control, Pontryagin maximum principles, transversality conditions, applications.

**Credits**

3

**MA685 - STOCHASTIC PROC/APPLI I****Long Course Title**

STOCHASTIC PROCESSES WITH APPLICATIONS I

**Course Description**

Discrete and continuous Markov chains, Poisson processes, counting and renewal processes, and applications.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA585 - PROBABILITY (3)

**MA686 - STOCHASTIC PROC/APPLI II****Long Course Title**

STOCHASTIC PROCESSES WITH APPLICATIONS II

**Course Description**

Gaussian and Wiener processes, general Markov processes, special types of processes from queueing and risk theory, and selected advanced topics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA685 - STOCHASTIC PROC/APPLI I (3)

**MA690 - SP TOPICS IN MATHEMATICS****Long Course Title**

SPECIAL TOPICS IN MATHEMATICS

**Course Description**

Offered upon demand. Advanced selected topics of interest in areas such as discrete mathematics, numerical analysis, differential equations, and stochastic processes.

**Credits**

3

**MA695 - GRADUATE SEMINAR****Long Course Title**

GRADUATE SEMINAR

**Course Description**

Selected topics in advanced mathematics, conducted as a research seminar.

**Credits**

1

**MA699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester a student is receiving direction on a master's thesis. A minimum of two terms is required. Maximum of nine hours credit awarded upon successful completion of the master's thesis.

**Credits**

3 - 9

**MA715 - NUM METHODS PART DIFF EQ II****Long Course Title**

NUMBER METHODS PARTIAL DIFFERENTIAL EQUATIONS II

**Course Description**

Finite element methods for parabolic, elliptic, and hyperbolic partial differential equations; error analysis stability, and convergence.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA538 - METRIC SPACES W/APPLICA (3)
  - MA615 - NUM METHODS PARTIAL DIFF EQ (3)

**MA726 - THRY PART DIFFERNTL EQUA****Long Course Title**

THEORY OF PARTIAL DIFFERENTIAL EQUATIONS

**Course Description**

Hilbert space theory of existence, uniqueness, and regularity for partial differential equations.

**Credits**

3

**MA740 - COMBINATORIAL ALGORITHMS****Course Description**

Linear, polynomial and exponential graph theoretic algorithms, generating combinatorial objects, and NP-completeness.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA640 - GRAPH THEORY (3)

**MA756 - COMPLEX ANALYSIS II****Course Description**

Applications of residue theory, harmonic functions and their applications, Mittag-Leffler theorem, infinite products, Weierstrass product theorem, conformal mapping and Riemann mapping theorem, univalent functions, analytic continuation and Riemann surfaces, Picard's theorems, and selected topics.

**Credits**

3

**MA785 - ADV PROBABILITY THEORY****Long Course Title**

ADVANCED PROBABILITY THEORY

**Course Description**

Measure and integration, probability spaces, convergence concepts, law of large numbers, random series, characteristic functions, central limit theorem, random walks, conditioning, Markov properties, conditional expectations, and elements of martingale theory.

**Credits**

3

**MA790 - SPECIAL TOPICS****Course Description**

Offered upon demand. Advanced selected topics of interest in areas such as discrete mathematics, numerical analysis, differential equations, and stochastic processes.

**Credits**

3

**MA795 - GRADUATE SEMINAR****Long Course Title**

GRADUATE SEMINAR

**Course Description**

Selected topics in advanced mathematics, conducted as a research seminar.

**Credits**

1

**MA799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Required each semester a student is receiving direction on a Ph.D. dissertation.

**Credits**

3 - 9

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# Mechanical & Aerospace Engineering

## **MAE115 - INTRODUCTION TO MACHINING**

### **Long Course Title**

INTRODUCTION TO MACHINING

### **Course Description**

Safety and familiarity with the machine shop environment, equipment, tools, and practices. Correlate student design with consequences of design choice. Basic turning, milling, welding, and sheet metal operations. Programming and operation of numerically controlled machines.

### **Credits**

1

## **MAE200 - PRINC AERONAUTICS & ASTRONAUTI**

### **Course Description**

Fundamental concepts of aerospace engineering including the history of flight, standard atmosphere, fluid and flow properties, lift and drag, propulsion, and structures; elementary aircraft performance, stability and control; basic astronautics and space environment; and aerospace vehicle design.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)

## **MAE211 - INTRO COMPUTATIONAL TOOLS**

### **Course Description**

Computer-aided design and solid modeling concepts including: model definition through constraints and dimensioning, and development of subassemblies and assemblies.

### **Credits**

2

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)

**MAE271 - STATICS****Course Description**

Topics include: forces, resultant forces, moments, couples equivalent force systems, equilibrium, distributed loads, two force members, trusses, centroids, moments of inertia, shear and bending moment diagrams, static and kinematic friction.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA201 - CALCULUS III (4)

**Equivalent Course(s)**

CE271 - STATICS

**MAE272 - DYNAMICS****Long Course Title**

DYNAMICS

**Course Description**

Kinematics and kinetics of a particle and of systems of particles with applications to central force motion, impact, relative motion, vibrations, and variable mass systems. Dynamics of rigid body in plan motion, relative motion in rotating coordinates, and gyroscopic motion.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE271 - STATICS (3)
    - MAE271 - STATICS (3)

**Equivalent Course(s)**

CE272 - DYNAMICS



## **MAE284 - NUMERICAL METHODS**

### **Long Course Title**

NUMERICAL METHODS

### **Course Description**

Use computational tools to solve mathematical problems of engineering interest. Discussion and application of root finding and optimization techniques. Other topics include curve fitting, Gauss Elimination, LA decomposition, and Cholesky decomposition, numerical integration and numerical differentiation. Solving initial and boundary value problems. Course includes a lab experience using modern computational tools.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)

### **Corequisites**

- Concurrently enrolled in:
  - MAE284L - NUMERICAL METHODS LAB

## **MAE284L - NUMERICAL METHODS LAB**

### **Course Description**

Complements material for MAE 284

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - MAE284 - NUMERICAL METHODS (3)

## **MAE310 - FLUID MECHANICS I**

### **Course Description**

Fluid properties and fundamental principles governing fluid behavior. Fluid statics, basic equations in integral form and differential form, potential flow, dimensional analysis, and internal incompressible viscous flows.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE271 - STATICS (3)
    - MAE271 - STATICS (3)

## **MAE311 - PRIN MEASUREMENT & INSTRUMEN**

### **Course Description**

Instrumentation and techniques for measurement of mechanical phenomena. Calibration, standards, computerized data acquisition, error analysis, signal conditioning, dynamic response, and experimental design. Laboratory included.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
  - MAE284 - NUMERICAL METHODS (3)

### **Corequisites**

- Concurrently enrolled in:
  - MAE311L - PRINC MEASUREMENT & INSTR LAB

## **MAE311L - PRINC MEASUREMENT & INSTR LAB**

### **Course Description**

Complements material for MAE 311

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)

## **MAE330 - FUNDAMENTALS AERODYNAMICS**

### **Long Course Title**

FUNDAMENTALS AERODYNAMICS

### **Course Description**

Fundamentals of incompressible flow, conservation laws, potential flow, similarity, airfoil and finite wing lift and drag, thin airfoil and panel methods, introduction to viscous flows and boundary layers, and modern airfoil and wing design.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MAE200 - PRINC AERONAUTICS & ASTRONAUTI (3)
  - MAE272 - DYNAMICS (3)

### **Corequisites**

- Concurrently enrolled in:
  - MAE331 - AERODYNAMICS LAB (1)

**MAE330L - LABORATORY****Long Course Title**

FUNDAMENTALS AERODYNAMICS LABORATORY

**Course Description**

This lab is a 0 credit lab component of the 4 credit MAE 330 course.

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MAE330 - FUNDAMENTALS AERODYNAMICS (3)

**MAE331 - AERODYNAMICS LAB****Long Course Title**

AERODYNAMICS LAB

**Course Description**

Demonstration of fundamental aerodynamic principles through wind tunnel testing including comparison of theory to experimental results.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - MAE330 - FUNDAMENTALS AERODYNAMICS (3)

**MAE341 - THERMODYNAMICS I****Course Description**

Basic laws of energy that apply in all branches of engineering and science. Properties of matter, state variables, reversible processes, first and second laws of thermodynamics with applications to closed and open systems. Availability of energy and irreversibility.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - CH121 - GENERAL CHEMISTRY I (3)
  - MA201 - CALCULUS III (4)
  - PH112 - GEN PHYSICS W/CALC II (3)

## **MAE342 - THERMODYNAMICS II**

### **Course Description**

Continuation of MAE 341. Thermodynamic cycles, thermodynamic relations among properties, chemical reactions, and phase and chemical equilibrium.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MAE341 - THERMODYNAMICS I (3)

## **MAE343 - COMPRESSIBLE AERODYNAMICS**

### **Course Description**

Compressible flow including area change, friction, and heat transfer. Fundamentals of acoustic waves, 1- and 2-D shock and expansion waves, shock-expansion theory, and linearized flow with applications to inlets, nozzles, wind tunnels, and supersonic flow over aerodynamic bodies and wings.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MAE341 - THERMODYNAMICS I (3)
  - MAE284 - NUMERICAL METHODS (3)
  - MAE330 - FUNDAMENTALS AERODYNAMICS (3)

## **MAE345 - HONORS THERMODYNAMICS COLQ**

### **Course Description**

Students in this course will be expected to participate in assigned readings and discussions to develop an understanding of the context behind the fundamental concepts and principles of thermodynamics. Through reflections students will be encouraged to apply this knowledge to develop their own creative ideas.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Student must have the following placement: Honors College (PLHP 7777)
  - Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
    - CHE344 - CHEM ENGR THERMODYNAMICS (3)
    - MAE341 - THERMODYNAMICS I (3)

## **MAE364 - KINEMATICS/DYNAM MACHINE**

### **Long Course Title**

KINEMATICS AND DYNAMICS OF MACHINES

### **Course Description**

Kinematics and dynamics of planar machinery including principles of mechanisms, cam design, gears and epicycle gear trains, and determination of position, velocity, and acceleration of mechanisms. Inertia forces in machines, balancing of rotating masses and reciprocating masses, and vibration analysis.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)
    - MAE284 - NUMERICAL METHODS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE272 - DYNAMICS (3)
    - MAE272 - DYNAMICS (3)

### **Corequisites**

- Concurrently enrolled in:
  - MAE364L - KINEMATICS/DYN MACHINE LAB

## **MAE364L - KINEMATICS/DYN MACHINE LAB**

### **Course Description**

Complements material for MAE 364

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - MAE364 - KINEMATICS/DYNAM MACHINE (3)

## **MAE370 - MECHANICS OF MATERIALS**

### **Course Description**

Design and analysis of simple structures for predetermined strength and deformation requirements. Topics include: theory of stress-strain, Hooke's Law, analysis of stresses and deformations in bodies loaded by axial, torsional, bending, and combined loads, and analysis of statically indeterminate systems.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE271 - STATICS (3)
    - MAE271 - STATICS (3)

### **Corequisites**

- Concurrently enrolled in:
  - MAE375 - MECHANICS OF MATERIALS LAB (1)

### **Equivalent Course(s)**

CE370 - MECHANICS OF MATERIALS

## **MAE371 - AEROSPACE STRUCTURES**

### **Course Description**

Stress and deflection analysis and design of lightweight aerospace structures, including solid and thin-walled beams with open and closed sections, under axial, bending, and torsional loads.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE200 - PRINC AERONAUTICS & ASTRONAUTI (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)

**MAE375 - MECHANICS OF MATERIALS LAB****Long Course Title**

MECHANICS OF MATERIALS LAB

**Course Description**

Experimental verification of material properties and structural deformation under axial, torsional, and bending loads. Test procedures, use of instrumentation, interpretation of experimental results and comparison to theory.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - MAE370 - MECHANICS OF MATERIALS (3)

**Equivalent Course(s)**

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CE375 - MECHANICS OF MATERIALS LAB

**MAE378 - MATERIALS & MFG PROCESS****Long Course Title**

MATERIALS & MANUFACTURING PROCESSES

**Course Description**

Engineering properties of materials, sources of information for properties of materials, cost considerations for material selection, manufacturing processes, casting, forming, machining, cost considerations for machining operations. One or more field trips included.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CE370 - MECHANICS OF MATERIALS (3)
  - MAE370 - MECHANICS OF MATERIALS (3)

**MAE395 - SEL TOPICS:MECH & AEROSPACE EG****Course Description**

Special topics in Mechanical or Aerospace Engineering.

**Credits**

1 - 3

**MAE440 - ROCKET PROPULSION I****Long Course Title**

ROCKET PROPULSION I

**Course Description**

Introduction to the operation, analysis, and design of liquid and solid rockets. Incorporates design and realization of a thermal system, in which students work in teams to design a rocket motor or component.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE343 - COMPRESSIBLE AERODYNAMICS (3)

**MAE441 - AIRBREATHING PROPULSION****Long Course Title**

AIRBREATHING PROPULSION

**Course Description**

Air breathing propulsion systems with emphasis on gas turbine engines for air-and rotor-craft. Includes thermodynamic power cycles, components design, and engine performance analysis. Incorporates a turbine engine design and realization team project.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE343 - COMPRESSIBLE AERODYNAMICS (3)



## **MAE450 - INTRO TO HEAT & MASS TRANSFER**

### **Long Course Title**

INTRODUCTION TO HEAT & MASS TRANSFER

### **Course Description**

Principles of heat and mass transfer; application of principles to problems in conductive, convective, and radioactive heat transfer and mass transfer; laminar and turbulent flow processes; boiling and condensation; heat exchangers.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE284 - NUMERICAL METHODS (3)
    - MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
    - MAE341 - THERMODYNAMICS I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MAE310 - FLUID MECHANICS I (3)
    - MAE330 - FUNDAMENTALS AERODYNAMICS (3)

### **Corequisites**

- Concurrently enrolled in:
  - MAE451 - HEAT & MASS TRANSFER LAB (1)

## **MAE451 - HEAT & MASS TRANSFER LAB**

### **Long Course Title**

HEAT & MASS TRANSFER LAB

### **Course Description**

Experimental measurements and analysis of heat and mass transfer mechanisms, processes and systems. Test procedures, use of instrumentation, interpretation of experimental results and comparison to theory.

### **Credits**

1

### **Corequisites**

- Concurrently enrolled in:
  - MAE450 - INTRO TO HEAT & MASS TRANSFER (3)

**MAE455 - DESIGN OF THERMAL SYSTEMS****Long Course Title**

DESIGN OF THERMAL SYSTEMS

**Course Description**

Heat transfer, thermodynamics, and fluid mechanics applied to analysis and design of systems for storage and transport, and exchange of thermal energy. Modeling of thermal equipment, simulation of system performance, optimization of system design, and comprehensive design of thermal systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE342 - THERMODYNAMICS II (3)
  - MAE450 - INTRO TO HEAT & MASS TRANSFER (3)

**MAE461 - VIBRATIONS ELASTIC SYS****Long Course Title**

VIBRATIONS ELASTIC SYSTEMS

**Course Description**

Formulation of the equations of motion of discrete and continuous systems, analytical and numerical methods of solution, eigenvalue problems and dynamic response.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE488 - ANALY ENGINEERING SYSTEM (3)

**Cross-Listed Course**

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**MAE466 - MECH & DSGN MACH ELEMENT****Long Course Title**

MECHANICAL & DESIGN OF MACHINE ELEMENTS

**Course Description**

Detailed design and selection of machine elements such as gears, shafts, and bearings. Analysis of stresses and deformations under combined static and dynamic loads, stress concentrations, and fatigue.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE364 - KINEMATICS/DYNAM MACHINE (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)

## **MAE468 - ELEMENTS OF SPACECRAFT DESIGN**

### **Long Course Title**

ELEMENTS OF SPACECRAFT DESIGN

### **Course Description**

Fundamentals of spacecraft engineering and design. Topics include: orbital mechanics, space environment, attitude determination and control, communications, space structures, thermal control, propulsion and power, and systems and mission design.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE371 - AEROSPACE STRUCTURES (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE272 - DYNAMICS (3)
    - MAE272 - DYNAMICS (3)

### **Cross-Listed Course**

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## **MAE469 - INTRODUCTION TO ASTRODYNAMICS**

### **Long Course Title**

INTRODUCTION TO ASTRODYNAMICS

### **Course Description**

This course will introduce basic topics in astrodynamics, the study of the motion of natural and artificial bodies in space. The course will cover 2-body motion, orbit determination, Kepler's problem, Gauss/Lambert's problem, impulsive burn orbit maneuvers, patch conic approximations for interplanetary trajectories, and lunar trajectories. By the end of the course, students should be able to calculate orbital motion around a given planet and calculate interplanetary trajectories for spacecrafts.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MAE284 - NUMERICAL METHODS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MAE272 - DYNAMICS (3)
    - CE272 - DYNAMICS (3)

### **Cross-Listed Course**

MAE569 - INTRODUCTION TO ASTRODYNAMICS

**MAE471 - ADV AEROSPACE STR & MTRLs****Long Course Title**

ADVANCED AEROSPACE STRUCTURES & MATERIALS

**Course Description**

Composite materials and applications in aerospace structures including: material types and properties and fabrication techniques, micromechanics, constitutive behavior, and classical laminated plate theory. Introduction to failure concepts, sandwich panels and finite element modeling of 1- and 2-D aerospace structures.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
  - MAE371 - AEROSPACE STRUCTURES (3)

**MAE474 - APP MECHANICS OF SOLIDS****Long Course Title**

APPLIED MECHANICS OF SOLIDS

**Course Description**

Stresses and strains at a point, theories of failures, stress concentration factors, thick-walled cylinders, torsion of noncircular members, curved beams, unsymmetrical bending, and shear center.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - CE370 - MECHANICS OF MATERIALS (3)
  - MAE370 - MECHANICS OF MATERIALS (3)

**Equivalent Course(s)**

CE474 - APP MECHANICS OF SOLIDS

**Cross-Listed Course**

MAE574 - APP MECHANICS OF SOLIDS

## **MAE477 - EXP TECH SOLID MECHANICS**

### **Course Description**

Experimental methods to determine stress, strain, displacement, velocity, and acceleration in various media. Theory and laboratory applications of electrical resistance strain gauges, brittle coatings, and photo elasticity. Application of transducers and experimental analysis of engineering systems.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)
  - Must have a class standing of Junior or higher

### **Cross-Listed Course**

MAE577 - EXP TECH SOLID MECHANICS

## **MAE480 - AIRCRAFT STABILITY & CONTROL**

### **Course Description**

The stability and control of aerodynamic vehicles. The design of aircraft to obtain good flying characteristics. The complete governing equations and analog solutions of linearized equations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE330 - FUNDAMENTALS AERODYNAMICS (3)
  - MAE488 - ANALY ENGINEERING SYSTEM (3)

### **Cross-Listed Course**

MAE580 - AIRCRAFT STABILITY & CONTROL

**MAE488 - ANALY ENGINEERING SYSTEM****Long Course Title**

ANALYSIS OF ENGINEERING SYSTEMS

**Course Description**

Development and analysis of mathematical engineering models of physical systems including mechanical, electrical, and combined systems. Determination of the dynamic response of physical systems. Develop a basic understanding of the design of control systems. Student must obtain a grade of C- or higher.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
    - MAE284 - NUMERICAL METHODS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE272 - DYNAMICS (3)
    - MAE272 - DYNAMICS (3)

**MAE489 - COMPUTER AIDED ENGR****Long Course Title**

COMPUTER AIDED ENGINEERING

**Course Description**

Analysis of design of structural, thermal, and dynamical systems using finite element and finite difference computer programs. Practical guidelines for discrete modeling; analysis of modeling errors. Comparison of exact and approximate solutions to boundary value problems.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - CE370 - MECHANICS OF MATERIALS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MAE284 - NUMERICAL METHODS (3)

**Cross-Listed Course**

MAE589 - COMPUTER AIDED ENGR

## **MAE490 - SENIOR DESIGN I**

### **Course Description**

Application of basic design principles including: design methodology, decision making, creativity, product liability, human factors, patents, ethics, and technical writing. Students will be assigned to a multi-disciplinary teams to develop design project requirements and initial concepts.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - ISE321 - ENGINEERING ECONOMY (3)
    - MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
    - MAE341 - THERMODYNAMICS I (3)
    - MAE375 - MECHANICS OF MATERIALS LAB (1)
  - Earn a minimum grade of S in all of the following:
    - EGR399 - ENGINEERING MENTORING II
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - MAE310 - FLUID MECHANICS I (3)
      - MAE378 - MATERIALS & MFG PROCESS (3)
    - Earn a minimum grade of C- in all of the following:
      - MAE330 - FUNDAMENTALS AERODYNAMICS (3)
      - MAE371 - AEROSPACE STRUCTURES (3)

## **MAE491 - SENIOR DESIGN II**

### **Long Course Title**

SENIOR DESIGN II

### **Course Description**

Continuation of MAE 490. Students work on multi-disciplinary teams to design, fabricate, test and demonstrate the performance of various mechanisms, products and vehicles according to customer requirements. Oral presentations and written detailed documentation of the project must also be completed.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - MAE490 - SENIOR DESIGN I (3)

**MAE492 - MISSION DESIGN & DEVELOPMNT****Course Description**

Senior Capstone Course Option. Students work design teams to develop missions of interest to NASA, DoD and industry. Includes defining the mission architecture and associated vehicles and components required to meet the customer requirements.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in all of the following:
    - MAE490 - SENIOR DESIGN I (3)

**MAE495 - SEL TOPICS:MECH & AEROSPACE EG****Credits**

1 - 4

**Cross-Listed Course**

MAE595 - SELECTED TOPICS MECH & AERO EG

**MAE496 - IND STUDY:MECH & AEROSPACE EG****Course Description**

Special independent project in a topic of Mechanical or Aerospace Engineering. Must work with a MAE faculty member with project approved by MAE department chair.

**Credits**

1 - 4

**MAE499 - UNDERGRADUATE THESIS****Course Description**

Required for students completing an Honors Program Bachelors Thesis.

**Credits**

3

**Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)



**MAE540 - ROCKET PROPULSION I****Long Course Title**

ROCKET PROPULSION I

**Course Description**

Introduction to the operation, analysis, and design of liquid and solid rockets.

**Credits**

3

**Cross-Listed Course**

MAE440 - ROCKET PROPULSION I

**MAE541 - AIRBREATHING PROPULSION****Course Description**

Survey of airbreathing propulsion systems with special emphasis on gas turbine engines for aircraft and rotorcraft. Thermodynamic power cycles, design of components, and overall engine performance analysis. Discussion of practical design and operations considerations including engine controls, reliability, and durability.

**Credits**

3

**Cross-Listed Course**

MAE441 - AIRBREATHING PROPULSION

**MAE563 - INTERMEDIATE DYNAMICS****Course Description**

Kinematics and dynamics of particles, system of particles, and rigid-bodies. Variational principles and Lagrangian mechanics.

**Credits**

3

**Cross-Listed Course**

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**MAE569 - INTRODUCTION TO ASTRODYNAMICS****Course Description**

This course will introduce basic topics in astrodynamics, the study of the motion of natural and artificial bodies in space. The course will cover 2-body motion, orbit determination, Kepler's problem, Gauss/Lambert's problem, impulsive burn orbit maneuvers, patch conic approximations for interplanetary trajectories, and lunar trajectories. By the end of the course, students should be able to calculate orbital motion around a given planet and calculate interplanetary trajectories for spacecrafts.

**Credits**

3

**Cross-Listed Course**

MAE469 - INTRODUCTION TO ASTRODYNAMICS

**MAE574 - APP MECHANICS OF SOLIDS****Long Course Title**

APPLIED MECHANICS OF SOLIDS

**Course Description**

Stresses and strains at a point, theories of failures, stress concentration factors, thick-walled cylinders, torsion of noncircular members, curved beams, unsymmetrical bending, and shear center.

**Credits**

3

**Equivalent Course(s)**

CE574 - APP MECHANICS OF SOLIDS

**Cross-Listed Course**

MAE474 - APP MECHANICS OF SOLIDS

**MAE577 - EXP TECH SOLID MECHANICS****Long Course Title**

EXPERIMENTAL TECH SOLID MECHANICS

**Course Description**

Experimental methods to determine stress, strain, displacement, velocity, and acceleration in various media. Theory and laboratory applications of electrical resistance strain gages, brittle coatings, and photoelasticity. Application of transducers and experimental analysis of engineering systems.

**Credits**

3

**Equivalent Course(s)**

-- --

**Cross-Listed Course**

MAE477 - EXP TECH SOLID MECHANICS

**MAE580 - AIRCRAFT STABILITY & CONTROL****Course Description**

Stability and control of aerodynamic vehicles. Design of aircraft to obtain good flying characteristics. Complete governing equations and analog solutions of linearized equations.

**Credits**

3

**Cross-Listed Course**

MAE480 - AIRCRAFT STABILITY & CONTROL

**MAE589 - COMPUTER AIDED ENGR****Course Description**

Application of computer methods in the analysis and design of structural, thermal, and dynamical systems. Use of state-of-the-art finite element and finite difference computer programs. Practical guidelines for discrete modeling; analysis of modeling errors. Comparison of exact and approximate solutions to boundary value problems. Use of microcomputers in engineering design and analysis.

**Credits**

3

**Cross-Listed Course**

MAE489 - COMPUTER AIDED ENGR

**MAE595 - SELECTED TOPICS MECH & AERO EG****Credits**

1 - 6

**Cross-Listed Course**

MAE495 - SEL TOPICS:MECH & AEROSPACE EG

**MAE610 - AERODYNAMICS****Course Description**

Fundamental concepts in aerodynamics including conservation laws, complex potential theory, thin airfoil theories, finite-wing lifting-line theory, boundary layers and Von Karman momentum integral equations.

**Credits**

3

**MAE620 - COMPRESSIBLE FLOW****Long Course Title**

COMPRESSIBLE FLOW

**Course Description**

Study of compressible subsonic, transonic and supersonic flows as described by the Euler equations. Linear and nonlinear theories of shockwaves, expansion waves, and their interactions. Applications to wind tunnels, nozzles, diffusers and aerodynamic bodies.

**Credits**

3

**MAE623 - COMPUTATIONAL FLUID DYNAMICS I****Long Course Title**

COMPUTATIONAL FLUID DYNAMICS I

**Course Description**

Formulations by finite difference, finite element, finite volume, and spectral element methods for incompressible and compressible flows. Explicit and implicit methods, Von Neumann error analysis, consistency, convergence, and accuracy.

**Credits**

3

**MAE640 - ROCKET PROPULSION II****Credits**

3

**MAE641 - ADV THERMODYNAMICS****Long Course Title**

ADVANCED THERMODYNAMICS

**Course Description**

Application of classical thermodynamics. Treatment of problems involving non-ideal gases and liquids, phase equilibrium, and chemical equilibrium.

**Credits**

3

**Equivalent Course(s)**

CHE641 - ADV THERMODYNAMICS

**MAE642 - INTRO TO ELECTRIC PROPULSION****Course Description**

Physics and performance of electrically-driven in-space propulsion for Earth satellites and deep space missions. The physics of electromagnetics, plasmas, gas kinetics as applied to electrothermal, electrostatic, electromagnetic, and other electric propulsion systems. Characteristics and performance metrics of resistojets, arcjets, ion engines, Hall effect thruster, pulsed plasma thruster, and magnetoplasmadynamic thrusters. Review of orbital mechanics including low-thrust transfers. Overview of current research efforts including plasma behavior, new thruster designs, and novel concepts.

**Credits**

3

**MAE643 - ADVANCED HEAT & MASS TRANSFER****Course Description**

Continuation of MAE 450 in the study of conductive, convective, and radiative heat transfer and mass transfer. Emphasis is placed on heat transfer in turbulent flows and high speed flows, combined mode heat transfer, and mass transfer in reacting flows.

**Credits**

3

## **MAE644 - ADVCD SOLID ROCKET PROPUL**

### **Course Description**

Overview of the design, manufacture and testing of solid rocket propulsion systems. Specific topics include propellant ballistics and combustion, grain design, motor case and nozzle design, thermal protection, motor performance, and reliability and failure.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE540 - ROCKET PROPULSION I (3)

## **MAE645 - COMBUSTION I**

### **Long Course Title**

COMBUSTION I

### **Course Description**

Combustion chemistry, introduction to mass transfer, chemical kinetics, reactors, simplified governing equations for chemically reacting flow, laminar diffusion and premixed flames.

### **Credits**

3

## **MAE651 - VISCOUS FLUID MECHANICS**

### **Course Description**

Fundamentals of incompressible viscous fluid motion, including development of Navier Stokes equation. Exact and approximate solutions for both large and small Reynolds number. Laminar and turbulent boundary layers.

### **Credits**

3

## **MAE660 - STRUCTURAL DYNAMICS**

### **Course Description**

Application of the theory of vibrations to discrete and continuous models of structures. Numerical methods of analysis for both spatial and temporal variables. Modal synthesis and step-by-step time integration methods. Finite element applications; substructuring techniques.

### **Credits**

3

**MAE664 - ROBOTICS I****Long Course Title**

ROBOTICS I

**Course Description**

This course prepares students to analyze three-dimensional coordinate transforms, three-dimensional kinematic and dynamic modeling of multi-body systems, as applied to robotic manipulators. Topics are: Spatial descriptions and transformations, manipulator kinematics, inverse manipulator kinematics, Jacobians: velocities and static forces, manipulator dynamics, trajectory generation.

**Credits**

3

**MAE665 - ROBOTICS II****Long Course Title**

ROBOTICS II

**Course Description**

This course prepares students to analyze advanced robotic systems, as applied to redundant robots (highly flexible robots acting like an elephant trunk), mobile robots (self-driving cars), unmanned surface vessels (boats/ships), and unmanned aerial vehicles (drones). Topics are: Redundant and hyper-redundant manipulators, applied nonlinear control for manipulators, obstacle avoidance and path planning in 2D workspace for mobile robots, kinematics and control of mobile robots, marine robotic surface vessels dynamic modeling and control, aerial robotic vehicles dynamic modeling and control.

**Credits**

3

**MAE671 - CONTINUUM MECHANICS****Long Course Title**

CONTINUUM MECHANICS

**Course Description**

Kinematics and kinetics, various coordinate systems, constitutive equations for continuous media; governing partial differential equations from first and second laws of thermodynamics; applications to solids, liquids, and gases.

**Credits**

3

**Equivalent Course(s)**

CE671 - CONTINUUM MECHANICS

**MAE672 - ELASTICITY****Course Description**

Formulation of boundary-value problems of classical elasticity. Application to plane problems, prismatic members, and axisymmetric problems. Introduction to three-dimensional problems.

**Credits**

3

**Equivalent Course(s)**

CE672 - THEORY OF ELASTICITY

**MAE673 - PLASTICITY****Long Course Title**

PLASTICITY

**Course Description**

Fundamentals of mechanical behavior of metals and nonmetals for stress states greater than the yield stress state. Deformation and flow theories. Stress-strain relations and yield criteria. Solution of boundary value problems with plastic bodies. Limit analysis of structures.

**Credits**

3

**Equivalent Course(s)**

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**MAE674 - FINITE ELEMENT ANALYSIS I****Long Course Title**

FINITE ELEMENT ANALYSIS I

**Course Description**

Finite element theory, variational methods, weighted residuals; applications to linear partial differential equations in continuous media; solution of boundary-value and initial-value problems.

**Credits**

3

**Equivalent Course(s)**

-- --

**MAE681 - MISSILE TRAJECTORY ANALYSIS****Course Description**

Methods for generating trajectories of missiles and projectiles are studied as well as control mechanisms. Point mass approximations are developed using approximations and exact representations of drag and atmospheric conditions. Full six degree-of-freedom models are developed and solved numerically. Aerodynamic models are developed for both slowly spinning missiles and spin stabilized projectiles. Projectile linear theory is developed and used to discuss gyroscopic and dynamic stability and introduce rapid trajectory generation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE580 - AIRCRAFT STABILITY & CONTROL (3)

**MAE692 - GRAD ENGR ANALYSIS I****Long Course Title**

GRADUATE ENGINEERING ANALYSIS I

**Course Description**

Ordinary differential equations (ODEs), Bessel functions, Legendre polynomials, Laplace transformations, simultaneous differential equations, application of ODEs to mechanical systems, partial differential equations (PDEs) and boundary-value problems, application of PDEs to mechanical systems.

**Credits**

3

**MAE693 - GRAD ENGR ANALYSIS II****Course Description**

Green's functions, Fourier series and integrals, linear algebra, vectors, vector analysis and integral theorems, introduction to tensor analysis, analytical functions of a complex variable, Taylor and Laurent expansions, the residue theorem, stability criteria, and Calculus of Variations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE692 - GRAD ENGR ANALYSIS I (3)

**MAE695 - SELECTED TOPICS MECH & AERO EG****Credits**

1 - 9

**MAE699 - MASTER'S THESIS****Course Description**

Required each semester in which a student is working and receiving direction on a master's thesis. Minimum of two semesters and 6 hours required for M.S.E. students. A maximum of 9 hours of credit is awarded upon successful completion of master's thesis. Requires thesis advisor permission. The 1 hour option is only available to students who have successfully defended their thesis and submitted it for approval, but do not meet the deadlines for graduation in the semester submitted. Students may only use the 1 hour option once in their career.

**Credits**

0 - 9



**MAE723 - COMPUTATIONAL FLUID DYNA II****Long Course Title**

COMPUTATIONAL FLUID DYNAMICS II

**Course Description**

Continuation of Computational Fluid Dynamics I, advanced topics in finite difference, finite element, finite volume, and spectral element methods.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE623 - COMPUTATIONAL FLUID DYNAMICS I (3)

**MAE740 - AEROTHERMODYNAMICS****Course Description**

Description of the dynamic and thermal fluid flow environments associated with hypervelocity vehicles and propulsion systems with emphasis on thermochemical nonequilibrium behavior. Topics include thermostatistical basis for internal energies, specific heats and shock strengths in dissociated and ionized gases; formulation of reacting flow conservation equations; and recent experimental advances in aerothermodynamics.

**Credits**

3

**MAE745 - COMBUSTION II****Course Description**

Droplet evaporation and burning, introduction to turbulent flow, turbulent diffusion and premixed flames, burning of solids, pollutant emissions, and detonation.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE645 - COMBUSTION I (3)

**MAE746 - CONVECTIVE HEAT TRANSFER****Long Course Title**

CONVECTIVE HEAT TRANSFER

**Course Description**

Advanced theory of convective transport processes in fluids, including transport of momentum and energy in laminar flow, boundary layers and turbulent transport in shear flow. Engineering applications include boiling and two phase processes.

**Credits**

3

**MAE754 - HYPERSONIC FLOW****Long Course Title**

HYPERSONIC FLOW

**Course Description**

Theories for treating the laminar and turbulent boundary layers of reacting fluids, mixtures, related chemical, thermodynamic, and physical phenomena in hypersonic flows. Leading edge bluntness, shock wave interactions, and vorticity effects.

**Credits**

3

**MAE758 - TURBULENCE****Long Course Title**

TURBULENCE

**Course Description**

Turbulence in gases and liquids; boundary layers, atmospheric phenomena.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE651 - VISCOUS FLUID MECHANICS (3)
  - MAE671 - CONTINUUM MECHANICS (3)

**MAE770 - EXP METHODS MATERIALS RESEARCH****Long Course Title**

EXPERIMENTAL METHODS IN MATERIALS RESEARCH

**Course Description**

The course will cover techniques commonly used in the study of Materials Science and Engineering for structural materials. The focus will be on Material Properties, Microscopy, and Spectroscopy/Diffraction. Evaluation of material properties will cover common testing methods used for metals, polymers, and composites and how to interpret data. Microscopy techniques will cover the preparation of specimens for imaging as well as the types of imaging and applicable analysis techniques for quantifying microstructural details. Spectroscopy/Diffraction will cover methods used to understand the elements and bonding in structural materials as well as their crystalline structure.

**Credits**

3

## **MAE778 - FRACTURE MECHANICS**

### **Course Description**

Theory of crack propagation, stress intensity factors, mapping techniques, series expansion, asymptotic approximations, field singularities, integral transforms, numerical solutions. (Same as CE 778.)

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE672 - ELASTICITY (3)

### **Equivalent Course(s)**

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## **MAE780 - THEORY OF ACOUSTICS**

### **Course Description**

Simple harmonic oscillators, damped and forced oscillators, 1-D wave equation, vibration of a string, 2-D wave equation, vibration of membranes, the acoustic wave equation, plane waves, cylindrical and spherical waves, reflection and transmission, radiation and reception of acoustic waves, absorption and attenuation of sound, cavities and wave guides, and architectural acoustics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MAE692 - GRAD ENGR ANALYSIS I (3)

## **MAE795 - SELECTED TOPICS MECH & AERO EG**

### **Credits**

1 - 9

## **MAE799 - DOCTORAL DISSERTATION**

### **Course Description**

Required each semester student is enrolled and receiving direction on doctoral dissertation.

### **Credits**

0 - 9

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## **Military Science**

**MIL101 - MILITARY SCIENCE I****Course Description**

A broad overview of the history of ROTC, the ROTC program and its benefits to the student. The positive aspects of a career as an Army officer include information on pay and allowances, the military retirement system, advancement, and travel opportunities. Military customs and traditions are discussed along with the role of the Army, the Army Reserves and the National Guard. Students receive instruction on land navigation, principles of leadership and traits of a leader.

**Credits**

2

**Corequisites**

- Concurrently enrolled in:
  - MIL101L - LABORATORY

**MIL101L - LABORATORY****Course Description**

Complements material for MIL 101

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MIL101 - MILITARY SCIENCE I (2)

**MIL102 - MILITARY SCIENCE I****Course Description**

A continuation of MIL 101.

**Credits**

2

**Corequisites**

- Concurrently enrolled in:
  - MIL102L - LABORATORY

**MIL102L - LABORATORY****Course Description**

Complements material for MIL 102

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MIL102 - MILITARY SCIENCE I (2)

## **MIL201 - MILITARY SCIENCE II**

### **Course Description**

The course consists of Instructions on the rules, techniques, and formats of effective military communications through military correspondence and briefings. The course covers the mission and functions of the various military branches. Students receive instruction on the organization, mission and weapons of the rifle squad, platoon, and company, along with being familiarized with the organization of the battalion, brigade, and divisional size units. The principles of war are analyzed to determine their proper employment. The confluence and interaction of military affairs with diplomatic, political, social, economic, and intellectual trends in society are addressed. Students are also provided instruction in map reading, which includes grid, scale and distance, direction, azimuth and back azimuth, elevation and relief.

### **Credits**

2

### **Corequisites**

- Concurrently enrolled in:
  - MIL201L - LABORATORY

## **MIL201L - LABORATORY**

### **Course Description**

Complements material for MIL 201

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - MIL201 - MILITARY SCIENCE II (2)

## **MIL202 - MILITARY SCIENCE II**

### **Course Description**

A continuation of MIL 201.

### **Credits**

2

### **Corequisites**

- Concurrently enrolled in:
  - MIL202L - LABORATORY

## **MIL202L - LABORATORY**

### **Course Description**

Complements material for MIL 202

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - MIL202 - MILITARY SCIENCE II (2)

**MIL301 - MILITARY SCIENCE III****Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - MIL301L - LABORATORY

**MIL301L - LABORATORY****Course Description**

Complements material for MIL 301

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MIL301 - MILITARY SCIENCE III (3)

**MIL302 - MILITARY SCIENCE III****Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - MIL302L - LABORATORY

**MIL302L - LABORATORY****Course Description**

Complements material for MIL 302

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MIL302 - MILITARY SCIENCE III (3)

**MIL401 - MILITARY SCIENCE IV****Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - MIL401L - LABORATORY

**MIL401L - LABORATORY****Course Description**

Complements material for MIL 401

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MIL401 - MILITARY SCIENCE IV (3)

**MIL402 - MILITARY SCIENCE IV****Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - MIL402L - LABORATORY

**MIL402L - LABORATORY****Course Description**

Complements material for MIL 402

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - MIL402 - MILITARY SCIENCE IV (3)

**MIL498 - MILITARY SCIENCE - VA****Credits**

2

**MIL499 - MILITARY SCIENCE SPEC TOPICS****Credits**

2

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## Modeling & Simulation

**MOD501 - SVY MODELING & SIMULATION****Long Course Title**

SURVEY OF MODELING & SIMULATION

**Course Description**

Broad-based introductory survey of Modeling & Simulation intended to provide an overview that exposes entering Modeling & Simulation students to a full range of the discipline. Surveyed items include identification, categorization and comparison of modeling methods, applications, architectures, and environments. Appropriate applications for different simulation paradigms and relative advantages and disadvantages of each. Model testing and validation approaches, distributed simulation, graphics and visualization, and other topics are introduced. Case studies of Modeling & Simulation applications.

**Credits**

3

**MOD591 - M & S INTEGRATED PRODUCT DEV****Course Description**

Introduction to the development of models and simulation in support of Integrated Product Team (IPT) projects. Development and use of models within the context of engineering projects and the systems engineering process. Topics address phases from model requirements through model verification. Offered and taught concurrently with MAE 491 Mechanical Engineering Design.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MOD501 - SVY MODELING & SIMULATION (3)

**MOD595 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Individual directed study under the supervision of an instructor.

**Credits**

3

**MOD596 - SELECTED TOPICS M & S****Long Course Title**

SELECTED TOPICS MODELING & SIMULATION

**Course Description**

Course offered by an instructor in a specialized area of Modeling and Simulation.

**Credits**

3



**MOD620 - M & S TEST & EVALUATION****Long Course Title**

MODELING & SIMULATION FOR TEST & EVALUATION

**Course Description**

Use of modeling and simulation as a complement to physical testing during systems evaluation. Opportunities for simulation throughout the acquisition life-cycle, including test planning, test execution, and systems analysis, are described, characterized, and illustrated through case studies. Strategies to optimize the use of scarce resources in executing test and evaluation programs are explored.

**Credits**

3

**MOD695 - INDEPENDENT STUDY****Course Description**

Individual directed study under the supervision of an instructor.

**Credits**

3

**MOD696 - SELECTED TOPICS M & S****Course Description**

Course offered by an instructor in a specialized area of modeling and simulation.

**Credits**

3

**MOD699 - MASTER'S THESIS****Course Description**

Required each semester student is working and receiving direction on master's thesis.

**Credits**

3 - 6

**MOD795 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

Individual directed study under the supervision of an instructor.

**Credits**

3

**MOD796 - SELECTED TOPICS M & S****Course Description**

Course offered by an instructor in a specialized area of modeling and simulation.

**Credits**

3

## **MOD799 - DOCTORAL DISSERTATION**

### **Course Description**

Required each semester student is working and receiving direction on doctoral dissertation.

### **Credits**

3 - 9

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## **Music**

### **MU100 - INTRO TO MUSIC LITERATURE**

#### **Long Course Title**

INTRODUCTION TO MUSIC LITERATURE

#### **Course Description**

This course is designed as a cultural and historical overview with the purpose of developing a greater appreciation and understanding of art music. Course content will include exploration of musicians, ideas, and issues in various types of western and non-western music, through reading, listening, and discussion. Offered every semester.

#### **Credits**

3

#### **Charger Foundations**

Area II: Fine Art

### **MU102 - INTRODUCTION TO WORLD MUSIC**

#### **Long Course Title**

INTRODUCTION TO WORLD MUSIC

#### **Course Description**

Exploration of ideas and issues in various types of non-Western music through reading, listening, and discussion. Includes optional travel abroad. Offered summer semesters only.

#### **Credits**

3

### **MU106 - INTRO TO MUSIC TECHNOLOGY**

#### **Long Course Title**

INTRODUCTION TO MUSIC TECHNOLOGY

#### **Course Description**

Introduction to Music Technology provides students with an overview of the technical and scientific aspects of music such as: acoustics, music psychology/sociology, and modern electronics. There will be particular emphasis on the use of electronic devices, MIDI and computer software to facilitate recording, playback, composition, storage, performance and analysis. Offered Fall and Spring semesters only.

#### **Credits**

1

## **MU108 - INTRODUCTION TO MUSIC THEORY**

### **Course Description**

Music fundamentals presented in a practical way for students who have no musical training as well as for majors/minors with limited theory knowledge. Mechanical aspects of clefs, notation, scales, intervals, chords, and rhythm with some aural skills, and practice in writing and harmonizing melodies. For students who expect to major or minor in music, this course may not be taken for degree credit. Offered Summer and Fall semesters only.

### **Credits**

3

## **MU110 - INTRO ARTS MANAGEMENT**

### **Long Course Title**

INTRODUCTION TO ARTS MANAGEMENT

### **Course Description**

Designed to explore arts management and administration, focusing primarily on non-profit considerations, but also addressing commercial activities in the arts.

### **Credits**

3

## **MU120 - BEGINNING CLASS VOICE**

### **Course Description**

This course is designed to aid beginning singers in learning the fundamentals of solo singing.

### **Credits**

1

## **MU130 - PIANO CLASS**

### **Course Description**

Techniques of performance, note reading, and basic musicianship.

### **Credits**

1

## **MU131 - PIANO CLASS II**

### **Credits**

1

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU130 - PIANO CLASS (1)

**MU140 - BEGINNING GUITAR CLASS****Course Description**

The course objective is to provide basic guitar instruction for students who have had little or no experience playing the guitar. The course will cover note reading, posture, chords, strumming patterns, simple arpeggios, scales, and simple to intermediate solo playing.

**Credits**

1

**MU199 - MUSIC FORUM****Long Course Title**

MUSIC FORUM

**Course Description**

Concert attendance is an indispensable aspect of a student's music education. Attendance requirements for this course include Thursday morning Music Forums as well as the number of formal concerts specified in the syllabus.

**Credits**

0

**MU201 - MUSIC THEORY I****Course Description**

Fundamentals of basic musicianship through practical as well as theoretical studies. Development of skills in written harmony and analysis. Appropriate Musicianship skills (e.g. MU 203) to be taken concurrently throughout theory program.

**Credits**

3

**Prerequisites**

- Earned minimum grade of D- or concurrently enrolled in all of the following:
  - MU203 - MUSICIANSHIP SKILLS I (1)

**MU202 - MUSIC THEORY II****Long Course Title**

MUSIC THEORY II

**Course Description**

Continuation of MU 201. Offered Fall semesters only.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - MU201 - MUSIC THEORY I (3)
    - MU203 - MUSICIANSHIP SKILLS I (1)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - MU204 - MUSICIANSHIP SKILLS II (1)

## **MU203 - MUSICIANSHIP SKILLS I**

### **Course Description**

To be taken concurrently with MU 201 and designed to complement written studies. Exercises in sight singing using solfege, numbers or other systems. Basic conducting patterns, rhythmic execution and melodic, harmonic, and rhythmic dictation.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - MU201 - MUSIC THEORY I (3)
  - Instructor or Department Chair Permission Required

## **MU204 - MUSICIANSHIP SKILLS II**

### **Course Description**

Continuation of MU 203. Offered Fall semesters only.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - MU201 - MUSIC THEORY I (3)
    - MU203 - MUSICIANSHIP SKILLS I (1)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - MU202 - MUSIC THEORY II (3)

## **MU205 - JAZZ THEORY**

### **Course Description**

This course serves as an introduction to the theoretical analysis of jazz harmony, with an emphasis on styles from the bebop era and later. Offered every other Fall semester.

### **Credits**

2

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU201 - MUSIC THEORY I (3)

### **Equivalent Course(s)**

MUJ205 - JAZZ THEORY

## **MU207 - MUSIC TECHNOLOGY I**

### **Long Course Title**

MUSIC TECHNOLOGY I: MIDI SEQUENCING & SYNTHESIS

### **Course Description**

Students will learn the basics of using a computer interface to create and edit music, using a software MIDI sequencer and Digital Audio Workstation. Students will learn the basics of MIDI sequencing and music production.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU106 - INTRO TO MUSIC TECHNOLOGY (1)

## **MU208 - MUSIC TECHNOLOGY II**

### **Long Course Title**

MUSIC TECHNOLOGY II: ADVANCED MIDI/MIXING & MASTERING AUDIO

### **Course Description**

Students will learn advanced techniques in digital audio production, including (but not limited to): Advanced MIDI sequencing, audio sampling, and production/mastering.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU106 - INTRO TO MUSIC TECHNOLOGY (1)
  - MU207 - MUSIC TECHNOLOGY I (3)

## **MU301 - THEORY OF MUSIC III**

### **Course Description**

A study on chromatic harmony and a continuation of the studies of MU 201 and MU 202.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - MU202 - MUSIC THEORY II (3)
    - MU204 - MUSICIANSHIP SKILLS II (1)
  - Earned minimum grade of D- or concurrently enrolled in all of the following:
    - MU303 - MUSICIANSHIP SKILLS III (1)

## **MU302 - MUSICAL MATLS OF MODERN ERA**

### **Course Description**

Systems of tonal organization, compositional procedures, terminology, and analytical methods that related to music since 1900. Offered every other Fall semester only.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU301 - THEORY OF MUSIC III (3)
  - MU303 - MUSICIANSHIP SKILLS III (1)

## **MU303 - MUSICIANSHIP SKILLS III**

### **Long Course Title**

MUSICIANSHIP SKILLS III

### **Course Description**

Continuation of MU 204. Offered Spring semesters only.

### **Credits**

1

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU202 - MUSIC THEORY II (3)
  - MU204 - MUSICIANSHIP SKILLS II (1)

## **MU305 - MUSIC TECHNOLOGY III**

### **Long Course Title**

MUSIC TECHNOLOGY III: SOUND DESIGN FOR MULTIMEDIA

### **Course Description**

This course will focus primarily on analogue and digital audio systems setup and implementation. Mixing consoles, amplifiers, loudspeakers, microphones, keyboards, playback equipment, processing, cabling, configuration, computer hardware and software will be discussed and demonstrated in depth.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU106 - INTRO TO MUSIC TECHNOLOGY (1)

## **MU306 - MUSIC TECHNOLOGY IV**

### **Long Course Title**

MUSIC TECHNOLOGY IV: AUDIO RECORDING AND PRODUCTION FOR GAME AUDIO

### **Course Description**

An exploration of music technology hardware and software, including an overview of acoustics, MIDI and digital audio data structures, and an introduction to multimedia authoring. Offered every other Spring semester only.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU106 - INTRO TO MUSIC TECHNOLOGY (1)

## **MU311 - HISTORY OF MUSIC I**

### **Long Course Title**

HISTORY OF MUSIC I

### **Course Description**

Focus on music as an art in western civilization to 1750. Representative musical works and style. Understanding of musical concepts in view of historical background and cultural context. Offered Fall semesters only.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU301 - THEORY OF MUSIC III (3)

## **MU312 - HISTORY OF MUSIC II**

### **Long Course Title**

HISTORY OF MUSIC II

### **Course Description**

Focus on music as an art in western civilization from 1750 to the present. Representative musical works and style. Understanding of musical concepts in view of historical background and cultural context. Offered Spring semesters only.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU301 - THEORY OF MUSIC III (3)



## **MU313 - SURVEY OF CHURCH MUSIC**

### **Long Course Title**

SURVEY OF CHURCH MUSIC

### **Course Description**

Explores Christian music from historical and musical perspectives.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU301 - THEORY OF MUSIC III (3)

## **MU316 - HIST & APPRECIATION OF JAZZ**

### **Long Course Title**

HISTORY & APPRECIATION OF JAZZ

### **Course Description**

This course is designed to explore the history and development of jazz as an art form, from its origins as popular music to its evolution into an Art Music. Improvisation will be explained and explored in the context of the different styles of jazz. The course will focus on understanding through listening to jazz. Every other spring semester only.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)

## **MU317 - JAZZ ARRANGING**

### **Long Course Title**

JAZZ ARRANGING

### **Course Description**

This course provides the student with instruction in arranging for small and large jazz ensembles, both instrumental and vocal. Offered every other Spring semester only.

### **Credits**

2

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU205 - JAZZ THEORY (2)

**MU320 - PIANO PEDAGOGY****Long Course Title**

PIANO PEDAGOGY

**Course Description**

Materials, techniques, and practices in teaching beginners and students through lower advanced grades of piano. Practical experience. Offered upon demand.

**Credits**

2

**Prerequisites**

- Instructor Permission Required

**MU321 - PIANO PEDAGOGY II****Long Course Title**

PIANO PEDAGOGY II

**Course Description**

An examination of relevant methods in piano pedagogy and technique for all levels of instruction. The course will also assess the historical achievements made by previous pedagogues in the field of piano pedagogy.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU320 - PIANO PEDAGOGY (2)

**MU322 - DICTION FOR SINGERS****Course Description**

Intended as an overview for vocal and choral students who wish to learn the diction requirements for singing in Latin, Italian, German, French, and English. Offered every Fall semester only.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA111 - STUDIO INSTR-VOICE (1)

**MU325 - CONDUCTING****Course Description**

Basic techniques of choral and instrumental conducting. Offered Fall semesters only.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU301 - THEORY OF MUSIC III (3)

**MU399 - SPECIAL TOPICS IN MUSIC****Course Description**

Special topics in music. Focus and emphasis of topics announced in advance. Offered upon demand.

**Credits**

3

**MU401 - FORM AND ANALYSIS****Long Course Title**

FORM AND ANALYSIS

**Course Description**

Musical forms and analysis. Offered every odd Fall semester only.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU303 - MUSICIANSHIP SKILLS III (1)
  - MU312 - HISTORY OF MUSIC II (3)

**Cross-Listed Course**

MU501 - FORM AND ANALYSIS

**MU402 - CHURCH MUSIC METHODS, MATERIALS & ADMINISTRATION****Course Description**

Church Music Methods, Materials, and Administration.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU301 - THEORY OF MUSIC III (3)

**MU404 - MUSIC TECHNOLOGY INDIVIDUAL PROJECT****Course Description**

Three-semester sequence for students enrolled in music technology majors and minors. Students will create individual projects in MIDI, sound creation and editing, and multimedia.

**Credits**

1

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU306 - MUSIC TECHNOLOGY IV (3)

## **MU406 - INTERNSHIP IN MUSIC TECHNOLOGY**

### **Long Course Title**

INTERNSHIP IN MUSIC TECHNOLOGY

### **Course Description**

An internship of eight hours per week working in the music technology industry. Offered upon demand.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU306 - MUSIC TECHNOLOGY IV (3)

## **MU407 - INTERNSHIP MUSIC BUSINESS**

### **Long Course Title**

INTERNSHIP IN MUSIC BUSINESS

### **Course Description**

Internship in Music Business.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU110 - INTRO ARTS MANAGEMENT (3)
  - MU301 - THEORY OF MUSIC III (3)
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)

## **MU408 - INTERNSHIP CHURCH MUSIC**

### **Course Description**

An internship of nine hours per week working in church music.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU301 - THEORY OF MUSIC III (3)
  - MU313 - SURVEY OF CHURCH MUSIC (3)
  - MU402 - CHURCH MUSIC METHODS, MATERIAL & ADMINISTRATION (3)
  - MUE328 - TEACHING GENERAL MUSIC (3)

## **MU409 - INTERNSHIP GRP PIANO PEDAGOGY**

### **Course Description**

An internship of three hours per week working with an approved group piano program.

### **Credits**

1

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU321 - PIANO PEDAGOGY II (2)
  - MU420 - PIANO LITERATURE (2)
  - MUE328 - TEACHING GENERAL MUSIC (3)

## **MU410 - INTERNSHIP INDIVID PIANO PEDAG**

### **Course Description**

An internship of nine hours per week working with a local piano teacher.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU321 - PIANO PEDAGOGY II (2)
  - MU420 - PIANO LITERATURE (2)
  - MUE328 - TEACHING GENERAL MUSIC (3)

## **MU416 - ORCHESTRATION**

### **Long Course Title**

ORCHESTRATION

### **Course Description**

Musical forms and analysis. Offered every odd Fall semester.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU301 - THEORY OF MUSIC III (3)
  - MU303 - MUSICIANSHIP SKILLS III (1)

### **Cross-Listed Course**

MU516 - ORCHESTRATION

**MU420 - PIANO LITERATURE****Long Course Title**

PIANO LITERATURE

**Course Description**

Music for string keyboard instruments from the pre-pianoforte period to the present. Representative works from all periods. Offered upon demand.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU302 - MUSICAL MATLS OF MODERN ERA (3)
  - MU312 - HISTORY OF MUSIC II (3)

**MU425 - ADVANCED CONDUCTING****Long Course Title**

ADVANCED CONDUCTING

**Course Description**

Review of basic conducting patterns. Emphasis on communication as the role of the conductor. Detailed score preparation. Offered every other Spring semester only.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU325 - CONDUCTING (2)

**MU501 - FORM AND ANALYSIS****Long Course Title**

FORM AND ANALYSIS

**Course Description**

Musical forms and analysis. Offered every other Fall semester only.

**Credits**

3

**Cross-Listed Course**

MU401 - FORM AND ANALYSIS

**MU516 - ORCHESTRATION****Long Course Title**

ORCHESTRATION

**Course Description**

Musical forms and analysis. Offered every other fall semester only.

**Credits**

3

**Cross-Listed Course**

MU416 - ORCHESTRATION

**MU525 - ADVANCED CONDUCTING****Long Course Title**

ADVANCED CONDUCTING

**Course Description**

This course addresses advanced tenets of conducting practice: conducting technique and gesture, rehearsal strategy and psychology, error detection and correction, and leadership and organization.

**Credits**

2

**Cross-Listed Course**

MU425 - ADVANCED CONDUCTING

**MU611 - SEMINAR IN MUSIC HISTORY & LIT****Long Course Title**

SEMINAR IN MUSIC HISTORY & LITERATURE

**Course Description**

The Seminar in Music History and Literature is a graduate-level survey of the history of art music in the Western world. The first section of the course will focus on the musical contributions of Antiquity, followed by a chronological survey of the primary music style periods, spanning from music of the Medieval period to music of the 21st century. The course will include inquiry into a variety of aspects of music history and literature, including cultural implications, styles, performance practices, genres, composers, and repertoires.

**Credits**

3

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## Music Applied

**MUA111 - STUDIO INSTR-VOICE****Long Course Title**

STUDIO INSTRUCTION-VOICE

**Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUA115 - STUDIO INSTR-VOICE****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA121 - STUDIO INSTR-ORGAN****Long Course Title**

STUDIO INSTRUCTION-ORGAN

**Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUA125 - STUDIO INSTR IN ORGAN****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA131 - STUDIO INSTR-PIANO****Long Course Title**

STUDIO INSTRUCTION-PIANO

**Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1



**MUA135 - STUDIO INSTR-PIANO****Long Course Title**

STUDIO INSTRUMENT-PIANO

**Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA141 - STUDIO INSTR-GUITAR****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUA145 - STUDIO INSTR-GUITAR****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA151 - STUDIO INSTR-STRINGS****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUA155 - STUDIO INSTR-STRINGS****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA161 - STUDIO INSTR-WOODWINDS****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUA165 - STUDIO INSTR-WOODWINDS****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA171 - STUDIO INSTR-BRASS****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUA175 - STUDIO INSTR-BRASS****Long Course Title**

STUDIO INSTRUCTION-BRASS

**Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA181 - STUDIO INSTR-PERCUSSION****Course Description**

For non-music majors, music minors, and music major's secondary instrument.

**Credits**

1

**MUA185 - STUDIO INSTR-PERCUSSION****Long Course Title**

STUDIO INSTRUCTION-PERCUSSION

**Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA191 - STUDIO INSTR-COMPOSITION****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1

**MUA195 - STUDIO INSTR-COMPOSITION****Course Description**

For aspiring music majors who have not yet been accepted as music majors.

**Credits**

1.5

**Prerequisites**

- Instructor Permission Required

**MUA211 - STUDIO INSTR-VOICE****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA111 - STUDIO INSTR-VOICE (1)

**MUA221 - STUDIO INSTR-ORGAN****Long Course Title**

STUDIO INSTRUCTION-ORGAN

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA121 - STUDIO INSTR-ORGAN (1)

**MUA231 - STUDIO INSTR-PIANO****Long Course Title**

STUDIO INSTRUMENT-PIANO

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA131 - STUDIO INSTR-PIANO (1)

**MUA241 - STUDIO INSTR-GUITAR****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA141 - STUDIO INSTR-GUITAR (1)

**MUA251 - STUDIO INSTR-STRINGS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA151 - STUDIO INSTR-STRINGS (1)

**MUA261 - STUDIO INSTR-WOODWINDS****Long Course Title**

STUDIO INSTRUMENTS-WOODWINDS

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA161 - STUDIO INSTR-WOODWINDS (1)

**MUA271 - STUDIO INSTR-BRASS****Long Course Title**

STUDIO INSTRUMENT-BRASS

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA171 - STUDIO INSTR-BRASS (1)

**MUA281 - STUDIO INSTR-PERCUSSION****Long Course Title**

STUDIO INSTRUCTION-PERCUSSION

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA181 - STUDIO INSTR-PERCUSSION (1)

**MUA291 - STUDIO INSTR-COMPOSITION****Credits**

1.5

**MUA311 - STUDIO INSTR-VOICE****Long Course Title**

STUDIO INSTRUCTION-VOICE

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA211 - STUDIO INSTR-VOICE (1.5)

**MUA321 - STUDIO INSTR-ORGAN****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA221 - STUDIO INSTR-ORGAN (1.5)

**MUA331 - STUDIO INSTR-PIANO****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA231 - STUDIO INSTR-PIANO (1.5)

**MUA341 - STUDIO INSTR-GUITAR****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA241 - STUDIO INSTR-GUITAR (1.5)

**MUA351 - STUDIO INSTR-STRINGS****Long Course Title**

STUDIO INSTRUMENT -STRINGS

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA251 - STUDIO INSTR-STRINGS (1.5)

**MUA361 - STUDIO INSTR-WOODWINDS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA261 - STUDIO INSTR-WOODWINDS (1.5)

**MUA371 - STUDIO INSTR-BRASS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA271 - STUDIO INSTR-BRASS (1.5)

**MUA381 - STUDIO INSTR-PERCUSSION****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA281 - STUDIO INSTR-PERCUSSION (1.5)

**MUA411 - STUDIO INSTRUCTION-VOICE****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA211 - STUDIO INSTR-VOICE (1.5)

**MUA421 - STUDIO INSTR-ORGAN****Long Course Title**

STUDIO INSTRUCTION -ORGAN

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA221 - STUDIO INSTR-ORGAN (1.5)

**MUA431 - STUDIO INSTR-PIANO****Long Course Title**

STUDIO INSTRUMENT-PIANO

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA231 - STUDIO INSTR-PIANO (1.5)

**MUA441 - STUDIO INSTR-GUITAR****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA241 - STUDIO INSTR-GUITAR (1.5)



**MUA451 - STUDIO INSTR-STRINGS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA251 - STUDIO INSTR-STRINGS (1.5)

**MUA461 - STUDIO INSTR-WOODWINDS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA261 - STUDIO INSTR-WOODWINDS (1.5)

**MUA471 - STUDIO INSTR-BRASS****Long Course Title**

STUDIO INSTRUCTION-BRASS

**Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA271 - STUDIO INSTR-BRASS (1.5)

**MUA481 - STUDIO INSTR-PERCUSSION****Long Course Title**

STUDIO INSTRUCTION-PERCUSSION

**Course Description**

For music majors' principle instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUA281 - STUDIO INSTR-PERCUSSION (1.5)

**MUA498 - SENIOR RECITAL****Long Course Title**

SENIOR RECITAL

**Course Description**

Represents the final semester of studio instruction on the primary instrument for all music majors except those pursuing the performance emphasis, who typically perform this recital as juniors. The recital must include a minimum of 30 minutes of music. The student must pass a recital jury at least two weeks before the scheduled recital performance.

**Credits**

1.5

**Prerequisites**

- Complete all of the following
  - Earned minimum grade of D- or concurrently enrolled in at least 1 of the following:
    - MUX396 - CHAMBER ENSEMBLES (0.5)
    - MUX398 - ORCHESTRA (1)
    - MUX399 - UAH WIND ENSEMBLE (1)
  - Earn a minimum grade of D- in at least 1 of the following:
    - MUA411 - STUDIO INSTRUCTION-VOICE (1.5)
    - MUA421 - STUDIO INSTR-ORGAN (1.5)
    - MUA431 - STUDIO INSTR-PIANO (1.5)
    - MUA441 - STUDIO INSTR-GUITAR (1.5)
    - MUA451 - STUDIO INSTR-STRINGS (1.5)
    - MUA461 - STUDIO INSTR-WOODWINDS (1.5)
    - MUA471 - STUDIO INSTR-BRASS (1.5)
    - MUA481 - STUDIO INSTR-PERCUSSION (1.5)

**MUA499 - PERFORMANCE EMPHASIS RECITAL****Long Course Title**

PERFORMANCE EMPHASIS RECITAL

**Course Description**

For music majors pursuing the performance emphasis only. The Performance Emphasis Recital represents the final semester of studio instruction on the primary instrument for music majors pursuing the performance emphasis. The recital must include a minimum of 60 minutes of music. The student must pass a recital jury at least two weeks before the scheduled recital performance.

**Credits**

1.5

**MUA511 - STUDIO INSTR - VOICE****Long Course Title**

STUDIO INSTRUCTION IN VOICE

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA521 - STUDIO INSTR - ORGAN**  
**Long Course Title**

STUDIO INSTRUCTION IN ORGAN

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA531 - STUDIO INSTR - PIANO**  
**Long Course Title**

STUDIO INSTRUCTION IN PIANO

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA551 - STUDIO INSTR - STRINGS**  
**Long Course Title**

STUDIO INSTRUCTION IN STRINGS

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA561 - STUDIO INSTR - WOODWINDS**  
**Long Course Title**

STUDIO INSTRUCTION IN WOODWINDS

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA571 - STUDIO INSTR - BRASS**  
**Long Course Title**

STUDIO INSTRUCTION IN BRASS

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA581 - STUDIO INSTR - PERCUSSION****Long Course Title**

STUDIO INSTRUCTION IN PERCUSSION

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**MUA598 - GRADUATE RECITAL****Long Course Title**

GRADUATE RECITAL / CAPSTONE PROJECT

**Course Description**

For Music Majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MUA511 - STUDIO INSTR - VOICE (1.5)
  - MUA521 - STUDIO INSTR - ORGAN (1.5)
  - MUA531 - STUDIO INSTR - PIANO (1.5)
  - MUA551 - STUDIO INSTR - STRINGS (1.5)
  - MUA561 - STUDIO INSTR - WOODWINDS (1.5)
  - MUA571 - STUDIO INSTR - BRASS (1.5)
  - MUA581 - STUDIO INSTR - PERCUSSION (1.5)

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## Music Education

**MUE321 - CHORAL/INSTRUMENTAL DIR OBSERV****Long Course Title**

CHORAL/INSTRUMENTAL DIRECTOR OBSERVATION

**Course Description**

In this course, music education students will observe band or choral programs outside their primary area: choral students in an instrumental program and instrumental students in a choral program. The student will observe and assist the band or choir director, gaining an experience in working with ensembles outside the student's primary area.

**Credits**

1

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU325 - CONDUCTING (2)

**MUE328 - TEACHING GENERAL MUSIC****Long Course Title**

TEACHING GENERAL MUSIC

**Course Description**

Materials and methods. Emphasis on developing teaching competencies in general music, with an emphasis on the elementary school level.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU301 - THEORY OF MUSIC III (3)

**MUE427 - ORG & DIR VOCALS ENS SEC****Credits**

3

**MUE428 - VOCAL/CHORAL METH SEC SCH****Long Course Title**

VOCAL/CHORAL METHODS FOR SECONDARY SCHOOLS

**Course Description**

Includes basic principles of breathing, posture, and resonance. Diction guidelines for Latin, Italian, German, and French; repertoire for both vocal and choral students; organizational methods for leading choral programs; rehearsal techniques; classroom management skills.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU425 - ADVANCED CONDUCTING (2)

**MUE429 - ORG & DIR INSTRU GRP SEC SCH****Course Description**

Reperotoire, procedures for administering and teaching school bands, orchestras and instrumental ensembles.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU425 - ADVANCED CONDUCTING (2)

**MUE527 - TEACHING GENERAL MUSIC****Long Course Title**

TEACHING GENERAL MUSIC

**Course Description**

Materials and methods. Emphasis on developing teaching competencies in general music, with an emphasis on the elementary school level.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU301 - THEORY OF MUSIC III (3)

**MUE528 - VOCAL/CHORAL METH SEC SCH****Long Course Title**

VOCAL/CHORAL METHODS FOR SECONDARY SCHOOLS

**Course Description**

Includes principles of breathing, posture and resonance; repertoire for both vocal and choral students; organizational methods for leading choral programs, rehearsal techniques; classroom management skills.

**Credits**

3

**MUE529 - ORG & DIR INSTRU GRP SEC****Long Course Title**

ORGANIZING AND DIRECTING INSTRUMENTAL GROUPS IN THE SECONDARY SCHOOLS

**Course Description**

Repertoire, rehearsal techniques, organizational methods, and procedures for administering and teaching school bands and instrumental ensembles.

**Credits**

3

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## Music Ensembles

**MUX386 - JAZZ CHAMBER ENSEMBLES****Course Description**

Discussion, evaluation, and performance of literature available for selected small jazz combos.

**Credits**

0.5

**MUX389 - UAH JAZZ ENSEMBLE****Course Description**

Open to all students by audition with the director. Provides the participant with opportunities to perform a wide variety of jazz styles in varied settings. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1

**MUX390 - UAH CONCERT CHOIR****Course Description**

Mixed voices singing the serious choral repertoire. Open to all students by audition. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1

**MUX391 - UAH CHAMBER CHOIR****Course Description**

Open to all students by audition. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1

**MUX392 - TENOR-BASS CHORALE****Course Description**

A non-auditioned choir for tenor and bass voices. Classical and popular music are included in the repertoire. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

0.5

**MUX393 - WOMEN'S CHOIR****Course Description**

A non-auditioned choir for soprano and alto ranges. Classical, folk and popular music are the components of this repertoire. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

0.5

**MUX394 - UNIVERSITY CHORALE****Course Description**

Mixed voices singing the serious choral repertoire. Open to all students by audition. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

0.5

**MUX395 - OPERA WORKSHOP****Course Description**

The study and performance of operas and excerpts from operatic literature. Audition required. Attendance required at all rehearsals and performances.

**Credits**

1

**MUX396 - CHAMBER ENSEMBLES****Long Course Title**

CHAMBER ENSEMBLES

**Course Description**

Discussion, evaluation and performance of literature available for selected small ensembles. Piano trios, quartets, quintets, string quartets, woodwind, brass, percussion and vocal ensembles. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

0.5

**MUX397 - UNIVERSITY BAND****Course Description**

The university band is a key component of the university environment at UAH as it encourages the continued musical participation of students outside the department of music. The university band has an open enrollment policy whichwelcomes all interested UAH students with previous band experience, regardless of major. The university band meets weekly to rehearse and perform a variety of band music ranging from contemporary band works for sports and university audiences, both on campus and off. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1



**MUX398 - ORCHESTRA****Course Description**

Preparation of the finest literature for symphony orchestra. Open to all students by audition with the conductor. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students, some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1

**MUX399 - UAH WIND ENSEMBLE****Course Description**

Preparation of the finest literature for wind ensemble and concert band. Open to all students by audition with the conductor. Required attendance at rehearsals and performances. The UAH music ensembles are open to all students; some ensembles require an audition. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1

**MUX590 - UAH CONCERT CHOIR****Long Course Title**

UAH CONCERT CHOIR

**Course Description**

The Concert Choir is a performing ensemble with its daily objectives aligned to meet departmental, regional, and national collegiate performance expectations. Through repertoire, students will gain an understanding of the importance of quality literature as well as knowledge of breadth of literature from medieval to contemporary. Open by audition.

**Credits**

1

**MUX591 - UAH CHAMBER CHOIR****Long Course Title**

UAH CHAMBER CHOIR

**Course Description**

Preparation of the finest literature for choral forces. Open to all students by audition with the conductor. Required attendance at rehearsals and performances. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree requirements.

**Credits**

1

**MUX599 - UAH WIND ENSEMBLE****Long Course Title**

UAH WIND ENSEMBLE

**Course Description**

Preparation of the finest literature for wind ensemble and concert band. Open to all students by audition with the conductor. Required attendance at rehearsals and performances. Ensemble participation is essential for all music majors and minors, and music majors are expected to participate in an appropriate ensemble each semester the student is enrolled for degree.

**Credits**

1

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## Music Jazz

**MUJ131 - JAZZ STUDIO INSTR-PIANO****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUJ141 - JAZZ STUDIO INSTR-GUITAR****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUJ151 - JAZZ STUDIO INSTRUCTION-BASS****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUJ161 - JAZZ STUDIO INSTR-WOODWINDS****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUJ171 - JAZZ STUDIO INSTR-BRASS****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUJ181 - JAZZ STUDIO INST-PERCUSSION****Course Description**

For non-music majors, music minors, and music majors' secondary instrument.

**Credits**

1

**MUJ205 - JAZZ THEORY****Course Description**

This course serves as an introduction to the theoretical analysis of jazz harmony, with an emphasis on styles from the bebop era and later. Offered every other Fall semester.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MU201 - MUSIC THEORY I (3)

**Equivalent Course(s)**

MU205 - JAZZ THEORY

**MUJ231 - JAZZ STUDIO INSTR-PIANO****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**MUJ241 - JAZZ STUDIO INST-GUITAR****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**MUJ251 - JAZZ STUDIO INSTRUCTION-BASS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**MUJ261 - JAZZ STUDIO INSTR-WOODWINDS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**MUJ271 - JAZZ STUDIO INSTR-BRASS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**MUJ281 - JAZZ STUDIO INSTR-PERCUSSION****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**MUJ308 - JAZZ IMPROVISATION I****Credits**

2

**MUJ309 - JAZZ IMPROVISATION II****Credits**

2

**MUJ331 - STUDIO INSTR-PIANO****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUJ231 - JAZZ STUDIO INSTR-PIANO (1.5)

**MUJ341 - STUDIO INSTR-GUITAR****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUJ241 - JAZZ STUDIO INST-GUITAR (1.5)

**MUJ351 - STUDIO INSTR-BASS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUJ251 - JAZZ STUDIO INSTRUCTION-BASS (1.5)

**MUJ361 - STUDIO INSTR-WOODWINDS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUJ261 - JAZZ STUDIO INSTR-WOODWINDS (1.5)

**MUJ371 - STUDIO INSTR-BRASS****Course Description**

For music majors' principal instrument.

**Credits**

1.5

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUJ271 - JAZZ STUDIO INSTR-BRASS (1.5)

## **MUJ381 - STUDIO INSTR-PERCUSSION**

### **Course Description**

For music majors' principal instrument.

### **Credits**

1.5

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MUJ281 - JAZZ STUDIO INSTR-PERCUSSION (1.5)

## **MUJ498 - SENIOR JAZZ RECITAL**

### **Course Description**

For music majors pursuing the jazz emphasis only. The Senior Jazz Recital represents the final semester of studio instruction on the primary jazz instrument for music majors pursuing the jazz emphasis. The recital must include a minimum of 30 minutes of music. The student must pass a recital jury at least two weeks before the scheduled performance.

### **Credits**

1.5

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# **Nursing**

## **NUR000 - NURSING-CREDIT BY VALIDATION**

### **Course Description**

All RN-BSN and Dual students are granted up to 39 credits toward graduation after completion of NUR 410. This course validates lower level division nursing courses taken in the ADN or diploma program of nursing. Up to 39 semester hours are entered on the student's official university transcript.

### **Credits**

3 - 39

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR001 - NURSING TESTING BLOCK**

### **Course Description**

Nursing Testing Block is a common block of time for students in different cohorts to take their examinations.

### **Credits**

0

**NUR220 - HEALTH PROMOTION NUR MAJORS****Long Course Title**

HEALTH PROMOTION FOR NURSING MAJORS

**Course Description**

The focus of this class is on health and high-level wellness across the lifespan, with an emphasis on promoting healthy living and preventing illness. Diverse perceptions and beliefs related to health and wellness are explored, and ways to put healthy ideas into practice are applied. Medical terminology to improve healthcare communication is incorporated into the course.

**Credits**

3

**Prerequisites**

- Admitted to: BSN NURSING

**NUR301 - CONCEPTS IN NURSING****Long Course Title**

PROFESSIONAL CONCEPTS IN NURSING

**Course Description**

This course focuses on professional development using concepts and theories basic to the art and science of nursing. Students are introduced to the concepts of communication, teaching/learning, clinical decision making, ethical/legal issues, nursing history, and philosophy for knowledge development of the discipline. Clinical informatics and healthcare technologies are also introduced as tools to deliver safe, ethical, evidence-based nursing care.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR303 - HEALTH ASSESSMENT (5)
    - NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)
    - NUR311 - CLINICAL CALCULATIONS (1)

## **NUR303 - HEALTH ASSESSMENT**

### **Course Description**

Focus on holistic assessment of culturally diverse clients across the life span. Communication & psychomotor skills are developed in clinical laboratory settings with an emphasis on normal findings and health promotion.

### **Credits**

5

### **Prerequisites**

- Admitted to: BSN NURSING

### **Corequisites**

- Concurrently enrolled in:
  - NUR303L - CLINICAL

### **Restrictions**

Only RN to BSN students are eligible to take the NUR 303 Health Assessment exam for **Department Credit**.

## **NUR303L - CLINICAL**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR303 - HEALTH ASSESSMENT (5)

## **NUR304 - APP PATHOPHYSIOLOGY LIFESPAN**

### **Long Course Title**

APPLIED PATHOPHYSIOLOGY ACROSS THE LIFESPAN

### **Course Description**

The course is designed to help the student build on previous knowledge of anatomy and physiology and microbiology. Adaptations and alterations in health status throughout the lifespan are emphasized. Students explore the implications of lifestyle to pathology within a nursing framework, and learn to relate normal body functioning to the pathophysiological changes that occur in, and as a result of disease.

### **Credits**

3

### **Prerequisites**

- Admitted to: BSN NURSING



## **NUR305 - NUR PROC MENTAL HLTH/ILLNESS**

### **Long Course Title**

NURSING PROCESS FOR MENTAL HEALTH AND ILLNESS

### **Course Description**

Nursing process in the promotion of psychosocial integrity. Emphasis is on the therapeutic use of self through providing interventions for individuals and groups in a variety of settings.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - NUR310 - PROFESSIONAL PRACTICE NURS I (6)
    - NUR312 - GERO NURSING CARE (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR321 - PHARMACOLOGY IN NURS (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR305L - CLINICAL

## **NUR305L - CLINICAL**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR305 - NUR PROC MENTAL HLTH/ILLNESS (4)

## **NUR307 - INQRY TO EVIDNC BASED NURS PRC**

### **Long Course Title**

INQUIRY INTO EVIDENCE-BASED NURSING PRACTICE

### **Course Description**

This course identifies various modes of inquiry and critical analysis used in the development of nursing science. Explore evidence based models to examine the evidence from a variety of research designs used to formulate nursing decisions. Emphasis is on identifying and synthesizing the best evidence to solve complex health problems in order to deliver safe, competent nursing care to diverse populations.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earn a minimum grade of C- in all of the following:
    - NUR310 - PROFESSIONAL PRACTICE NURS I (6)
    - NUR312 - GERO NURSING CARE (3)
    - NUR321 - PHARMACOLOGY IN NURS (3)

## **NUR308 - NURS CARE ADULTS HLTH ALTERN**

### **Long Course Title**

NURSING CARE OF ADULTS WITH ALTERATION IN HEALTH

### **Course Description**

This course focuses on the application of the nursing process in the collaborative nursing management of adult clients experiencing simple to complex physiological health alterations. Clinical experiences provide opportunities for beginning to intermediate clinical reasoning in the acute care environment. The embodiment of professionalism and professional values are emphasized.

### **Credits**

8

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - NUR310 - PROFESSIONAL PRACTICE NURS I (6)
    - NUR312 - GERO NURSING CARE (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR321 - PHARMACOLOGY IN NURS (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR308L - CLINICAL

## **NUR308L - CLINICAL**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR308 - NURS CARE ADULTS HLTH ALTERN (8)

## **NUR310 - PROFESSIONAL PRACTICE NURS I**

### **Long Course Title**

PROFESSIONAL PRACTICE IN NURSING I

### **Course Description**

This course will begin the process of learning foundational nursing skills to be used in nursing practice. Psychomotor nursing skills needed to assist individuals meet basic human needs will be taught with expectation the student will demonstrate competency in performing skills. Laboratory and clinical experiences are included.

### **Credits**

6

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earn a minimum grade of C- in all of the following:
    - NUR301 - CONCEPTS IN NURSING (3)
    - NUR311 - CLINICAL CALCULATIONS (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR303 - HEALTH ASSESSMENT (5)
    - NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR310L - CLINICAL

## **NUR310L - CLINICAL**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR310 - PROFESSIONAL PRACTICE NURS I (6)

## **NUR311 - CLINICAL CALCULATIONS**

### **Long Course Title**

CLINICAL CALCULATIONS IN NURSING

### **Course Description**

In this course, students will learn to accurately calculate medication dosages. Testing in this course will establish minimal medication calculation proficiency required to progress to the second semester of the nursing program.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR301 - CONCEPTS IN NURSING (3)
    - NUR303 - HEALTH ASSESSMENT (5)
    - NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)

## **NUR312 - GERO NURSING CARE**

### **Long Course Title**

GERONTOLOGICAL NURSING CARE

### **Course Description**

This course is designed to focus on current health care issues affecting the older adult. Physical, psychological, sociocultural, and spiritual aspects of aging are examined within the context of the family and society. The course applies the nursing process with emphasis on optimal health for the older adult.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earn a minimum grade of C- in all of the following:
    - NUR301 - CONCEPTS IN NURSING (3)
    - NUR303 - HEALTH ASSESSMENT (5)
    - NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)
    - NUR311 - CLINICAL CALCULATIONS (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR310 - PROFESSIONAL PRACTICE NURS I (6)
    - NUR321 - PHARMACOLOGY IN NURS (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR312L - CLINICAL

## **NUR312L - CLINICAL**

### **Course Description**

This is the clinical component of the Gerontological Nursing Care course. The course will focus on current health care issues affecting the older adult. Physical, psychological, sociocultural, and spiritual aspects of aging are examined within the context of the family and society. The course applies the nursing process with emphasis on optimal health for the older adult.

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR312 - GERO NURSING CARE (3)

## **NUR321 - PHARMACOLOGY IN NURS**

### **Long Course Title**

PHARMACOLOGY IN NURSING

### **Course Description**

This course comprises pharmacological concepts incorporating an overview of historical and current issues in drug therapy. Pharmacotherapeutics, pharmacodynamics, pharmacokinetics, contraindications and precautions for prototype drugs for multiple body systems are presented. Major emphasis is placed on nursing management practices using nursing process as well as the nurses' role in optimizing reliable medication administration.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earn a minimum grade of C- in all of the following:
    - NUR301 - CONCEPTS IN NURSING (3)
    - NUR303 - HEALTH ASSESSMENT (5)
    - NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)
    - NUR311 - CLINICAL CALCULATIONS (1)

## **NUR339 - INFO MGMT IN HEALTHCARE**

### **Course Description**

This course is designed to introduce information management, including decision support systems. The use of information management nomenclature is integrated into the learning activities. The role of the nurse as an advocate in improving patient outcomes using data management is explored. Safety, ethical, and legal concerns are addressed.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR390 - INDEPENDENT STUDY**

### **Course Description**

Individualized independent study of specific nursing problem under sponsorship of a nursing faculty member with special preparation in the field. Elective

### **Credits**

1 - 4

### **Prerequisites**

- Admitted to: BSN NURSING

## **NUR391 - GLOBAL HEALTH**

### **Credits**

1

**NUR400 - SPECIAL TOPICS****Credits**

3

**NUR401 - NURS CARE CRITICALLY ILL ADULT****Long Course Title**

NURSING CARE OF THE CRITICALLY ILL ADULT

**Course Description**

This course explores the evidence-based collaborative nursing management of clients experiencing complex physiological health alterations. Clinical experiences will provide opportunities for advanced clinical reasoning in the acute and critical care environments.

**Credits**

5

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUR305 - NUR PROC MENTAL HLTH/ILLNESS (4)
  - NUR307 - INQRY TO EVIDNC BASED NURS PRC (3)
  - NUR308 - NURS CARE ADULTS HLTH ALTERNATNS (8)

**Corequisites**

- Concurrently enrolled in:
  - NUR401L - CLINICAL

**NUR401L - CLINICAL****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR401 - NURS CARE CRITICALLY ILL ADULT (5)

## **NUR403 - MATERNAL INFANT NURSING**

### **Course Description**

This course explores internal and external factors, which impact the health of the family during the antepartal, intrapartal, postpartal and neonatal periods of childbearing. Emphasis is placed on nursing care of these clients, normal physiology, pathophysiology, psychological and sociocultural needs, and risk identification and reduction.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUR305 - NUR PROC MENTAL HLTH/ILLNESS (4)
  - NUR307 - INQRY TO EVIDNC BASED NURS PRC (3)
  - NUR308 - NURS CARE ADULTS HLTH ALERTNS (8)
  - NUR321 - PHARMACOLOGY IN NURS (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR403L - CLINICAL

## **NUR403L - CLINICAL**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR403 - MATERNAL INFANT NURSING (4)

## **NUR404 - FAMILY-CENTER NUR CARE CHILDRE**

### **Long Course Title**

FAMILY-CENTERED NURSING CARE OF CHILDREN

### **Course Description**

This course is designed to introduce the concept of family centered pediatric care that is developmentally appropriate for a culturally diverse population. Clinical experiences in selected agencies.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUR301 - CONCEPTS IN NURSING (3)
  - NUR307 - INQRY TO EVIDNC BASED NURS PRC (3)
  - NUR308 - NURS CARE ADULTS HLTH ALERTNS (8)
  - NUR321 - PHARMACOLOGY IN NURS (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR404L - CLINICAL

**NUR404L - CLINICAL****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR404 - FAMILY-CENTER NUR CARE CHILDRE (4)

**NUR405 - COMMUNITY HEALTH NURS****Long Course Title**

COMMUNITY HEALTH NURSING

**Course Description**

The course explores the community as client and teaches concepts and knowledge necessary to promote the health of the public and communities. Emphasis is on community health theory, individual, family, and community assessment, aspects of epidemiology, program planning and evaluation, trends and issues, legislation, ethics, research, health care economics and disaster management.

**Credits**

4

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - NUR401 - NURS CARE CRITICALLY ILL ADULT (5)
    - NUR403 - MATERNAL INFANT NURSING (4)
    - NUR404 - FAMILY-CENTER NUR CARE CHILDRE (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR407 - PROF PRACTICE IN NURSING II (8)

**Corequisites**

- Concurrently enrolled in:
  - NUR405L - CLINICAL EXPERIENCE

**NUR405L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR405 - COMMUNITY HEALTH NURS (4)



**NUR407 - PROF PRACTICE IN NURSING II****Long Course Title**

PROFESSIONAL PRACTICE IN NURSING II

**Course Description**

The focus of this course is the leadership and management functions of professional nursing. Essential skills are communication, interprofessional collaboration, delegation, coordination, and the application of evidence-based practice models. Clinical experiences will focus on performance of the professional nurse role in a concentrated practicum.

**Credits**

8

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - NUR401 - NURS CARE CRITICALLY ILL ADULT (5)
    - NUR403 - MATERNAL INFANT NURSING (4)
    - NUR404 - FAMILY-CENTER NUR CARE CHILDRE (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR405 - COMMUNITY HEALTH NURS (4)
    - NUR408 - PROF PRAC IN NURS III SEMINAR (2)

**Corequisites**

- Concurrently enrolled in:
  - NUR407L - CLINICAL EXPERIENCE

**NUR407L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR407 - PROF PRACTICE IN NURSING II (8)

**NUR408 - PROF PRAC IN NURS III SEMINAR****Long Course Title**

PROFESSIONAL PRACTICE IN NURSING III SEMINAR

**Course Description**

The purpose of this class is to facilitate the synthesis of knowledge, the application of critical thinking to decisions about patient care, and to ensure safe and competent nursing practice. Test-taking skills and time management concepts will be applied in preparation of the NCLEX-RN licensure exam.

**Credits**

2

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - NUR407 - PROF PRACTICE IN NURSING II (8)

## **NUR410 - TRANSITION INTO PROFESS ROLES**

### **Long Course Title**

TRANSITION INTO PROFESSIONAL ROLES

### **Course Description**

The course examines the multi-dimensional role of the professional nurse in health systems. Through the analysis of a paradigm case and development of a personal philosophy of nursing, the student evaluates professional practice and develops goals designed to guide learning and professional development. Philosophical, social, political, legal, and ethical issues inherent in the practice of professional nursing in health systems are discussed.

### **Credits**

3

### **Prerequisites**

- Admitted to: BSN NURSING

## **NUR413 - LEADERSHIP PROF NURS PRACT**

### **Long Course Title**

LEADERSHIP IN PROFESSIONAL NURSING PRACTICE

### **Course Description**

4 course / 1 clinical. Designed to improve leadership in professional nursing practice, this course provides the basis for advancing health through leading and managing the care giver and care coordinator roles in a variety of culturally diverse healthcare systems. The exploration of the health care environment takes place within the context of organizational climate and culture, leading change and innovation and promoting excellence in professionalism. Students apply leadership principles through case study and the development of a clinical change project within indirect practice experiences.

### **Credits**

5

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR415 - HONORS DIRECTED RESEARCH**

### **Course Description**

This course allows for implementation of the student's research proposal as developed in the Honors section of NUR 307. The focus is on data collection and preliminary data analysis. The seminar format will provide students access to expert researchers.

### **Credits**

2

### **Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

## **NUR416 - HONORS RESEARCH SEMINAR**

### **Course Description**

The focus of this seminar is completion of final research report, as begun in NUR 307 and NUR 415.

### **Credits**

1

### **Prerequisites**

- Student must have the following placement: Honors College (PLHP 7777)

## **NUR417 - NURS CARE VUL POP**

### **Long Course Title**

NURSING CARE OF VULNERABLE POPULATIONS

### **Course Description**

This course examines health determinants and health disparities within the US as well as in the global community. The student will examine health disparities and the burden of disease within social, cultural, political, economic, and environmental contexts. Students will examine strategies aimed at risk reduction and improvement through outcomes.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR421 - AC CARE FOR PROFESSIONAL NURSE**

### **Long Course Title**

ACUTE CARE FOR THE PROFESSIONAL NURSE

### **Course Description**

2 Course / 1 Clinical. The nursing process is applied to clients experiencing physiological health alterations requiring complex and collaborative nursing strategies and appropriate resource management. Direct practice experiences are focused on conducting comprehensive assessments and care planning with the interprofessional team.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR422 - COMMUNITY HEALTH FOR PROF NURS**

### **Long Course Title**

COMMUNITY HEALTH FOR THE PROFESSIONAL NURSE

### **Course Description**

4 course/1 clinical. This course is designed to provide the application of theoretical concepts related to primary, secondary, and tertiary care of families and aggregates in professional nursing practice. Emphasis is on application of the nursing process in assessing social determinants of health and promoting community health for diverse communities. Application of direct practice experience activities are designed to meet individual learning needs of the student in delivering and managing care of selected aggregate populations.

### **Credits**

5

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR423 - EVID BASED PRACTICE PROFESS NU**

### **Long Course Title**

EVIDENCE-BASED NURSING FOR THE PRACTICING RN

### **Course Description**

This course fosters the application of the best clinical evidence into practice in order to promote improvement in healthcare experiences and patient outcomes. Various modes of scientific inquiry used in the development of nursing science are incorporated into a survey of research techniques, methodologies, and ethical concerns. This will enable students to select and evaluate appropriate information relevant to evidence based practice. Students will develop skills in the use of electronic databases to facilitate acquisition of current information. Emphasis is placed on the critical analysis of evidence to be used in formulating nursing decisions and the design of client care guidelines.

### **Credits**

5

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)

## **NUR426 - SPACE LIFE SCIENCES**

### **Course Description**

Theories and concepts of contemporary issues in health and nursing related to space life sciences.

### **Credits**

3

## **NUR427 - INTRODUCTION TO FORENSICS**

### **Course Description**

This course provides an overview of the field of forensic nursing. Concepts of care for victims and family members of violence, abuse, traumatic accidents, and criminal activity are discussed. Current healthcare practices and medical/legal/ethical issues are reviewed. Elective, open to all university students.

### **Credits**

3

## **NUR429 - NURSING THEORY**

### **Long Course Title**

NURSING THEORY

### **Course Description**

This course examines the theoretical and conceptual aspects of nursing practice. Student will critique, evaluate and apply various nursing theories to practice settings. Research evidence, best practice guidelines, and the principles of person-centered care will be integrated to guide theory selection.

### **Credits**

4

### **Prerequisites**

- Student must be in College of Nursing

## **NUR439 - NURSING MEDICAL MISSIONS**

### **Course Description**

This course will examine concepts and issues associated with humanitarian and medical missions. Commonly occurring healthcare needs relevant to specific vulnerable populations will be analyzed in preparation for delivery of healthcare. The culmination of this course is a trip abroad to deliver healthcare to a population in need within the structure of a medical mission. This course is an accepted elective in the Nursing program.

### **Credits**

2

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUR303 - HEALTH ASSESSMENT (5)

## **NUR500 - SPECIAL TOPICS**

### **Course Description**

Advanced study of selected area of interest in nursing.

### **Credits**

2 - 4

**NUR518 - GLOBAL HEALTH: INTERN'L STUDY****Long Course Title**

GLOBAL HEALTH: INTERNATIONAL STUDY

**Course Description**

This course will focus on a selected international health care system. The international system will be compared with the US Health Care System in relation to economic, social, cultural, policy, and environmental influences. Culmination of the course will center on international experiences with health care facilities, policy making bodies, historical, and cultural introductions in another country.

**Credits**

3

**NUR524 - HEALTH CARE AND THE LAW****Course Description**

Introduction to basic health law in the context of application to nursing practice. Content relates to involvement with legal principles in nursing and healthcare. Federal, state and local aspects of law are included.

**Credits**

3

**NUR527 - INTRO TO FORENSICS IN NURSING****Long Course Title**

INTRODUCTION TO FORENSIC NURSING

**Course Description**

This elective course provides an overview of the field of forensic nursing. Course concepts include care for victims of violence, forensic issues in healthcare, forensic investigation, and career information for forensic nursing. Current health care practices and medical/legal/ethical issues will be discussed.

**Credits**

3

**NUR528 - GERONTOLOGICAL NURSING****Course Description**

Nursing care of older adults in multiple settings. Issues and trends are incorporated.

**Credits**

3

**NUR534 - PALLIATIVE CARE****Course Description**

Palliative care is when there is no longer a medical treatment or cure for a physical problem. This palliative care course includes meeting the physical, emotional, social, cultural, and spiritual needs of individual and their families. A course focus will be on coping, grief, bereavement, pain relief and managing living implications for individuals with life-threatening illnesses. There will be recognition of the importance of individuality, vulnerability, and resilience in the quality of living during the dying process.

**Credits**

3

## **NUR539 - NURSING MEDICAL MISSIONS**

### **Course Description**

This course will focus on global health and humanitarian concepts and issues, and the nursing care needed to impact those issues. These issues will be examined and analyzed in relation to the mission country's economic, social, cultural, policy, and environmental influences. Culmination of the course will center on international experiences with supervised nursing care for a medical mission in another country. This course is an accepted elective in the Nursing Program. Additional work is required for graduate credit.

### **Credits**

3

## **NUR540 - ONCOLOGY NURSING**

### **Course Description**

This course provides a holistic approach to the nursing care of people with cancer. The nursing process is used as the basis for promoting health and facilitating adaptation in the person with cancer. The course includes clinical experiences in selected agencies.

### **Credits**

3

## **NUR550 - ISSUES IN TRANSPLANTATION**

### **Course Description**

This course is designed to provide basic theoretical knowledge related to nursing care of the donor/transplantation client and their families. Course content focuses on historical and current issues in donor/transplantation nursing including the impact of legal, ethical, political, economic, and socio-cultural issues. Students will examine the roles of the professional nurse and the interdisciplinary team in the management of care for the donor/transplant client and their families. Topics of future research and critical thinking will be discussed.

### **Credits**

3

## **NUR602 - SCHOLARLY INQ ADV NUR PRAC**

### **Long Course Title**

SCHOLARLY INQUIRY FOR ADVANCED NURSING PRACTICE

### **Course Description**

This course explores research methods, evidence-based practice, ethical research and frameworks to guide scholarly inquiry. The learner will analyze quality improvement studies, clinical practice guidelines, and research studies. Synthesis of learning will involve developing a clinical question, evaluating evidence, and disseminating an interprofessional scholarly product with practice recommendations.

### **Credits**

3

**NUR604 - ROLE DEVELOPMENT FOR APN****Long Course Title**

ROLE DEVELOPMENT FOR ADVANCED PRACTICE NURSING

**Course Description**

This course prepares the graduate nursing student for the transition into advanced practice. Role development includes initiating and maintaining professional working relationships, understanding of legal, financial, ethical, and professional expectations and responsibilities, analysis of pertinent health policies, and demonstration of management principles and practices expected of the advanced practice nurse.

**Credits**

3

**NUR605 - ADVANCED HLTH ASSESSMENT****Long Course Title**

ADVANCED HEALTH ASSESSMENT

**Course Description**

This course provides an opportunity for the advanced practice nurse to utilize theoretical and evidence-based clinical practice guidelines to conduct a comprehensive and systematic assessment as a foundation for decision making in caring for patients across the lifespan.

**Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - NUR605L - CLINICAL

**NUR605L - CLINICAL****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)

**NUR606 - ADV PATHOPHYSIOLOGY****Long Course Title**

ADVANCED PATHOPHYSIOLOGY

**Course Description**

This course is designed to expand on the previous knowledge of anatomy, physiology, and developmental disease processes. Physiological alterations, as they affect individuals across the lifespan, are reviewed with an introduction of diagnostic reasoning as it relates to disease manifestations.

**Credits**

3



**NUR607 - PHARMACOLOGY IN ADV PRAC****Long Course Title**

PHARMACOLOGY IN ADVANCED PRACTICE

**Course Description**

This course is designed to provide the advanced practice nurse with pharmacological knowledge and clinical reasoning skills necessary to analyze data obtained from the health history, pharmacological review, and evaluation of treatment plans for patients across the lifespan.

**Credits**

3

**NUR610 - FAMILY NURSE PRACTITIONER I****Course Description**

This clinical course introduces the roles of the advanced practice nurse in direct and indirect health services for assessment, health promotion, illness prevention, and health management of patients across the lifespan.

**Credits**

6

**Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)
  - NUR606 - ADV PATHOPHYSIOLOGY (3)
  - NUR607 - PHARMACOLOGY IN ADV PRAC (3)

**Corequisites**

- Concurrently enrolled in:
  - NUR610L - CLINICAL

**NUR610L - CLINICAL****Long Course Title**

CLINICAL EXPERIENCE

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR610 - FAMILY NURSE PRACTITIONER I (6)

## **NUR611 - FAM NURS PRACTITIONER II**

### **Long Course Title**

FAMILY NURSE PRACTITIONER II

### **Course Description**

This clinical course promotes the integration of advanced practice principles of evidence-based health promotion and disease prevention across the lifespan.

### **Credits**

6

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - NUR604 - ROLE DEVELOPMENT FOR APN (3)
  - NUR610 - FAMILY NURSE PRACTITIONER I (6)

### **Corequisites**

- Concurrently enrolled in:
  - NUR611L - CLINICAL EXPERIENCE

## **NUR611L - CLINICAL EXPERIENCE**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR611 - FAM NURS PRACTITIONER II (6)

## **NUR612 - FAMILY NUR PRACTITIONER III**

### **Long Course Title**

FAMILY NURSE PRACTITIONER III

### **Course Description**

This clinical course promotes the integration of principles of evidenced-based, culturally competent care in primary care, emphasizing health promotion and disease prevention across the lifespan for the advanced practice nurse.

### **Credits**

6

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR611 - FAM NURS PRACTITIONER II (6)

### **Corequisites**

- Concurrently enrolled in:
  - NUR612L - CLINICAL EXPERIENCE

**NUR612L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR612 - FAMILY NUR PRACTITIONER III (6)

**NUR613 - FAM NURS PRACTITIONER IV****Long Course Title**

FAMILY NURSE PRACTITIONER IV

**Course Description**

This course is the capstone family nurse practitioner clinical course in which the advanced practice student assumes the professional role by integrating, translating, and applying evidence-based care while working collaboratively and respectfully within the healthcare system providing patient-centered care to improve patient and system outcomes.

**Credits**

6

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR612 - FAMILY NUR PRACTITIONER III (6)

**Corequisites**

- Concurrently enrolled in:
  - NUR613L - CLINICAL EXPERIENCE

**NUR613L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR613 - FAM NURS PRACTITIONER IV (6)

## **NUR620 - ADLT GER ACUTE CR NUR PRACT I**

### **Long Course Title**

ADULT GERONTOLOGY ACTUE CARE NURSE PRACTITIONER I

### **Course Description**

Clinical course that introduces advanced nursing skills necessary for the assessment, health promotion, disease prevention, and health management of the complex, acute, critically and chronically ill patient across the entire spectrum of adulthood.

### **Credits**

6

### **Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)
  - NUR606 - ADV PATHOPHYSIOLOGY (3)
  - NUR607 - PHARMACOLOGY IN ADV PRAC (3)

### **Corequisites**

- Concurrently enrolled in:
  - NUR620L - CLINICAL EXPERIENCE

## **NUR620L - CLINICAL EXPERIENCE**

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUR620 - ADLT GER ACUTE CR NUR PRACT I (6)

## **NUR621 - ADLT GER ACUTE CR NUR PRACT II**

### **Long Course Title**

ADULT GERONTOLOGY ACTUE CARE NURSE PRACTITIONER II

### **Course Description**

This clinical course focuses on the assessment and management of adults with acute health problems in secondary or tertiary settings. The student develops increasing interpretive skills with assessment parameters using collaborative protocols in delivering care to patients with selected acute/critical alterations in health.

### **Credits**

6

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - NUR604 - ROLE DEVELOPMENT FOR APN (3)
  - NUR620 - ADLT GER ACUTE CR NUR PRACT I (6)

### **Corequisites**

- Concurrently enrolled in:
  - NUR621L - CLINICAL EXPERIENCE

**NUR621L - CLINICAL EXPERIENCE****Long Course Title**

CLINICAL EXPERIENCE

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR621 - ADLT GER ACUTE CR NUR PRACT II (6)

**NUR622 - ADLT GER ACUTE CR NUR PRAC III****Long Course Title**

ADULT GERONTOLOGY ACUTE CARE NURSE PRACTITIONER III

**Course Description**

This clinical course promotes the integration of principles of evidence-based patient-centered care of critically ill adult-gerontological patients with complex comorbidities.

**Credits**

6

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR621 - ADLT GER ACUTE CR NUR PRACT II (6)

**Corequisites**

- Concurrently enrolled in:
  - NUR622L - CLINICAL EXPERIENCE

**NUR622L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR622 - ADLT GER ACUTE CR NUR PRAC III (6)

**NUR623 - ADLT GER ACUTE CR NUR PRAC IV****Long Course Title**

ADULT GERONTOLOGY ACUTE CARE NURSE PRACTITIONER IV

**Course Description**

This course is the capstone adult-gerontology acute care nurse practitioner clinical course in which the advanced practice student assumes the professional role by integrating, translating, and applying evidence-based case while working collaboratively and respectfully within the healthcare system providing patient-centered care to improve patient and system outcomes.

**Credits**

6

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR622 - ADLT GER ACUTE CR NUR PRAC III (6)

**Corequisites**

- Concurrently enrolled in:
  - NUR623L - CLINICAL EXPERIENCE

**NUR623L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR623 - ADLT GER ACUTE CR NUR PRAC IV (6)

**NUR629 - US HEALTHCARE SYSTEM****Long Course Title**

US HEALTH CARE SYSTEM

**Course Description**

The focus of this course is to explore the structure and complexity of the US health care system. Content will include underlying values, major historical developments, reimbursement methods, stakeholders, and issues driving reform.

**Credits**

2

**Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**NUR630 - FND CONCEPTS NURSING ADMINATOR****Long Course Title**

THEORETICAL FOUNDATIONS FOR NURSE ADMINISTRATORS

**Course Description**

This course focuses on the Nurse Administrator's relationships and roles in a variety of health care systems. Theories of management and organization are analyzed from the perspective of structure, communication, dynamics, trends, and key management, responsibilities, and functions in health care delivery systems.

**Credits**

3

**NUR631 - LEADERSHIP HUMAN RESRC MGMT****Long Course Title**

LEADERSHIP IN RESOURCE MANAGEMENT

**Course Description**

This course focuses on the role of the nurse leader in resource allocation and management in health care systems and related organizations. Content related to human resource management includes workforce development, the healthcare workforce, recruitment, selection, retention, development, and labor relations.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**NUR632 - HEALTHCARE FINANCE & ECONOMICS****Long Course Title**

ECONOMIC AND POLICY IMPLICATIONS FOR NURSE LEADERS IN HEALTH CARE SYSTEMS

**Course Description**

This course focuses on economic and financial implications for nurse administrators with emphasis on executive level budget management and business planning skills. The course is designed to assist nurse administrators in gaining conceptual knowledge regarding budgeting in health systems and policy factors impacting cost, quality and access to healthcare.

**Credits**

4

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**NUR634 - INTERNSHIP IN NURS LEADERSHIP****Long Course Title**

INTERNSHIP IN NURSING LEADERSHIP

**Course Description**

This is the culminating course that provides opportunities to synthesize leadership learning, administrative theory, and operational skills in budgeting and finance, and resource management. This knowledge is applied through the identified nurse executive competencies in selected health care related organizations. Course objectives reflect the AONL competencies and QSEN standards. Clinical hours 3, Contact hours 135.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**Corequisites**

- Concurrently enrolled in:
  - NUR634L - CLINICAL EXPERIENCE

**NUR634L - CLINICAL EXPERIENCE****Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUR634 - INTERNSHIP IN NURS LEADERSHIP (3)

**NUR638 - INFORMATICS NRSE ADMINISTRATOR****Long Course Title**

INFORMATICS FOR NURSE ADMINISTRATORS

**Course Description**

The focus of this course is on the structuring and processing of health information for making decisions in health care.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)



**NUR640 - CURRICULUM DEV IN NURSING****Long Course Title**

CURRICULUM DEVELOPMENT IN NURSING

**Course Description**

Principles and concepts of curriculum development are examined with respect to their application to development of both the theoretical and clinical components of nursing programs. Includes principle regarding theories of learning, the changing nature of knowledge and societal needs as basic considerations directing curricular planning and revision.

**Credits**

3

**NUR641 - TEACHING/LEARNING IN NURSING****Long Course Title**

TEACHING/LEARNING IN NURSING COURSE INFORMATION

**Course Description**

Emphasis is on the development of classroom and clinical laboratory teaching skills and includes a critical appraisal of specific teaching strategies. The student is provided the opportunity to acquire knowledge in the use and design of common and innovative teaching methods including web-based and interactive delivery systems.

**Credits**

3

**NUR642 - TESTING & EVALUATION IN NURS****Long Course Title**

TESTING AND EVALUATION IN NURSING

**Course Description**

Major emphasis on the development of classroom and clinical skills in appraisal and evaluation methods of student performance. The student is provided with the opportunity to acquire skills in constructing various types of testing and evaluation (formative and summative) procedures as they relate to nursing education.

**Credits**

3

**NUR643 - FACULTY ROLE DEV IN NURSING****Long Course Title**

FACULTY ROLE DEVELOPMENT IN NURSING

**Course Description**

Role theory serves as the basis for the discussion and practice in developing teaching, service and research role of a faculty member in a nursing program. Discussion on legislative and professional agencies issues and policies impinging on the teaching role.

**Credits**

3

## **NUR644 - PRACTICUM IN TEACHING**

### **Course Description**

Opportunities to do practice teaching with nursing students in various phases of their basic educational programs. Learning activities will be planned on an individual basis and based on the specific teaching responsibilities of their primary course assignment. Selected baccalaureate degree and/or associate degree programs will be used as practice sites.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR640 - CURRICULUM DEV IN NURSING (3)
  - NUR641 - TEACHING/LEARNING IN NURSING (3)
  - NUR642 - TESTING & EVALUATION IN NURS (3)

## **NUR646 - INSTRUC TECH NURSING EDUC**

### **Long Course Title**

INSTRUCTIONAL TECHNOLOGY IN NURSING EDUCATION

### **Course Description**

The appropriate use of educational technology can afford faculty an opportunity to engage learners and bring concepts to life while supporting formative and summative assessment. This course will examine instructional technology, the design and integration of educational strategies, and methodological tools to engage learners to meet course and curriculum goals.

### **Credits**

3

## **NUR647 - STRATEGIC PLANNING**

### **Course Description**

The focus of this course is to prepare Nursing Administration graduate students to comprehend and actively engage in organizational strategic planning. Emphasis is on the development of organizational blueprints, tracking current trends, forecasting, and innovative strategies in healthcare to achieve an organization's mission and vision, thus remaining competitive in the healthcare industry.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**NUR648 - CONCEPTS OF HLTH ASSMNT & PROM****Long Course Title**

CONCEPTS OF HEALTH ASSESSMENT AND PROMOTION FOR NURSE EXECUTIVES

**Course Description**

This course focuses on concepts in health assessment and health promotion for individuals and populations. This course is designed for nurses preparing for leadership roles in health care organizations.

**Credits**

3

**Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**NUR649 - QUALITY, SAFETY, & RISK MGMT****Long Course Title**

QUALITY, SAFETY, AND RISK MANAGEMENT

**Course Description**

This course focuses on the quality, safety, and risk management concepts for nurse leaders. Content includes the use of quality tools and use of data to evaluate and promote quality outcomes.

**Credits**

3

**Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

**NUR650 - INDEPENDENT STUDY****Course Description**

Planning, implementation, and evaluation of related phenomena of special interest observed in nursing practice.

**Credits**

2 - 4

**NUR652 - CLINICAL PRACTICUM****Long Course Title**

CLINICAL PRACTICUM FOR NURSE EDUCATORS

**Credits**

3

**Corequisites**

- Concurrently enrolled in:
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)

**NUR671 - USABILITY EVAL HEALTHCARE I.T.****Course Description**

This course examines usability methods for the design and testing of healthcare information technology including health information websites, electronic health records, clinical decision support systems, and medical equipment with an emphasis on the user experience. The iterative nature of user-centered design and usability testing of health IT will be emphasized.

**Credits**

3

**NUR698 - PLAN II:OTHER RES ACTIVITIES****Long Course Title**

SPECIAL RESEARCH TOPICS

**Course Description**

Application of activities appropriate to student program of study. Intended to expand student knowledge and enhance track specific content.

**Credits**

1 - 4

**NUR699 - PLAN I: THESIS****Course Description**

Independent research investigation related to practice of nursing under faculty guidance. Minimum of six hours required.

**Credits**

1 - 4

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)

**NUR700 - CLINICAL DATA MGT & ANALYSIS****Long Course Title**

CLINICAL DATA MANAGEMENT AND ANALYSIS

**Course Description**

This course provides students with the knowledge to understand, collect, manage, and measure clinical data. Students will explore data collection and management processes, level of measurement, basic statistics, and measurement for improvement in order to effectively use clinical data. Data entry exercises employed through analytical tools and statistical software packages will allow the students to practice and apply the basic data management and analysis skills needed for the evaluation of clinical data and evidence-based practice.

**Credits**

3

## **NUR701 - WRITING FOR PUBLICATION**

### **Course Description**

This course concerns the development of skills in writing, editing, and preparing manuscripts for publication from initial idea to submission of a publishable manuscript. The course emphasizes a writing process that encourages productivity and collegial peer review. Legal and ethical aspects of authorship prepare students for responsible practices expected of scholars. Students should have mastered basic writing skills, e.g. grammar, syntax, and computer skills, prior to enrolling in this course.

### **Credits**

3

## **NUR729 - EVID BASED PRACT DESGN & TRANS**

### **Long Course Title**

EVIDENCE-BASED PRACTICE, DESIGN AND TRANSLATION

### **Course Description**

The purpose of this course is to provide students with models for evidence-based practice (EBP) design and improvement science. Students learn to formulate clinical questions in answerable format and search for and identify best research evidence. The focus of the course is to evaluate and critically appraise evidence for rigor and applicability to a clinical problem and the impact on the improvement of clinical outcomes. Students will translate evidence into practice environments for safe, quality care. Students will gain access to information that will support optimal clinical decision-making. All content and assignments are applied by the student to begin development of the DNP Project.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR700 - CLINICAL DATA MGT & ANALYSIS (3)

## **NUR731 - PHIL/THEOR/CONC FOUN FOR APN**

### **Long Course Title**

PHILOSOPHICAL, THEORETICAL AND CONCEPTUAL FOUNDATIONS FOR ADVANCED PRACTICE NURSING

### **Course Description**

This course assists students to use theory and conceptual models to guide the advanced nursing practice and scholarship at the doctoral level. The content is derived from the philosophical and scientific underpinnings of nursing, natural and psycho-social sciences.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: DNP NURS
  - Earn a minimum grade of B- in all of the following:
    - NUR701 - WRITING FOR PUBLICATION (3)

## **NUR733 - INFORMATICS FOR APN**

### **Long Course Title**

INFORMATICS FOR ADVANCED NURSING PRACTICE

### **Course Description**

This course focuses on the collection, organization, and analysis of information in nursing and health care. Students are introduced to the specialty of nursing informatics, the information system life-cycle, telemedicine, and the use of technology to enhance nursing care delivery and patient safety. Students will also learn how to manipulate large and small patient databases for the analysis of patient outcomes.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: DNP NURS
  - Earned minimum grade of B- or concurrently enrolled in all of the following:
    - NUR729 - EVID BASED PRACT DESGN & TRANS (3)

## **NUR734 - ADVANCED EXPERIENTIAL CLINICAL**

### **Long Course Title**

ADVANCED EXPERIENTIAL CLINICAL COURSE

### **Course Description**

This course is designed to validate Master's level competencies in clinical and organizational leadership. The course is required for post-master's DNP students who are graduates of Master of Science in Nursing programs with less than 500 clinical hours

### **Credits**

1 - 7

## **NUR735 - POPULATION HEALTH IN APN**

### **Long Course Title**

POPULATION HEALTH IN ADVANCED PRACTICE NURSING

### **Course Description**

This course prepares students to implement population-based health promotion and disease prevention activities. The course applies an epidemiologic framework and focuses on a spectrum of issues affecting health which includes emerging infectious diseases, emergency preparedness, disparities in health and healthcare services, and the impact of exposomics on population health.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: DNP NURS
  - Earned minimum grade of B- or concurrently enrolled in all of the following:
    - NUR729 - EVID BASED PRACT DESGN & TRANS (3)

## **NUR737 - INTDIS LDRSHP/ROLE DEV PRA EXC**

### **Long Course Title**

INTERDISCIPLINARY LEADERSHIP AND ROLE DEVELOPMENT FOR PRACTICE EXCELLENCE

### **Course Description**

This course focuses on organizational and systems leadership and skills critical to role development in independent and interprofessional practice. Content includes communication, conflict resolution, collaboration and negotiation, leadership, and team functioning to enhance the experience and outcomes of patient care and to reduce the cost of care.

### **Credits**

3

### **Prerequisites**

- Admitted to: DNP NURS

## **NUR738 - DNP PROJECT DEVELOPMENT**

### **Course Description**

This course is designed to assist the student in finalizing the DNP project plan and developing an application to the Institutional Review Board (IRB) for the protection of human subjects. The student will document previously acquired abilities and competencies in a professional portfolio. Students will participate in the seminar sessions to obtain guidance and receive peer suggestions about the portfolio and project plans.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: DNP NURS
  - Earn a minimum grade of B- in all of the following:
    - NUR734 - ADVANCED EXPERIENTIAL CLINICAL (1 - 7)
    - NUR742 - PROGRAM EVAL & METHODS (3)
    - NUR743 - EVID BASED PRACT STRATEGIES (3)

## **NUR739 - DNP PROJECT**

### **Long Course Title**

DNP PROJECT

### **Course Description**

The DNP project is planned, implemented, and evaluated by the DNP student in consultation with the DNP committee. The student writes a manuscript suitable for publication and makes a scholarly presentation of findings to peers and faculty. A minimum of seven credit hours for this course are distributed across several semesters as determined by the chair.

### **Credits**

0 - 7

### **Prerequisites**

- Complete all of the following
  - Admitted to: DNP NURS
  - Earned minimum grade of S or concurrently enrolled in all of the following:
    - NUR738 - DNP PROJECT DEVELOPMENT (3)

## **NUR740 - HLH POLIC/POLIT:IMPLICATION HC**

### **Long Course Title**

HEALTH POLICY AND POLITICS:IMPLICATIONS IN HEALTH CARE

### **Course Description**

This course focuses on the unique challenges of engaging and influencing health care policy at local, state, national or international levels. It is designed to develop skills, techniques, and approaches to the critical analysis of health policy proposals, health policies, and to identify stakeholders in policy development. The health policy framework is analyzed from a governmental, institutional, and organizational perspective.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: DNP NURS
  - Earn a minimum grade of B- in all of the following:
    - NUR729 - EVID BASED PRACT DESGN & TRANS (3)

## **NUR742 - PROGRAM EVAL & METHODS**

### **Long Course Title**

PROGRAM EVALUATION METHODS

### **Course Description**

The purpose of this course is to synthesize knowledge related to translation/implementation science models and strategies to improve health outcomes. The emphasis in the course is the use of program evaluation as a tool to achieve positive changes in health status, initiate and manage quality improvement, engage in risk anticipation, and facilitate organizational and system level changes.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of B- or concurrently enrolled in all of the following:
  - NUR729 - EVID BASED PRACT DESGN & TRANS (3)

## **NUR743 - EVID BASED PRACT STRATEGIES**

### **Long Course Title**

EVIDENCE-BASED PRACTICE STRATEGIES

### **Course Description**

This course expands on evidence-based design to refine a problem statement and a clinical question. Content includes conducting a systematic review of the literature to guide the selection of methods, strategies, tools and metrics needed to complete a successful DNP project. Students will develop and have approved a proposed DNP project plan.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUR742 - PROGRAM EVAL & METHODS (3)



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# Nursing Accelerated

## **NUA315 - CONCEPTS IN NURSING**

### **Long Course Title**

CONCEPTS IN NURSING

### **Course Description**

This course focuses on professional development using concepts and theories basic to the art and science of nursing.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Concurrently enrolled in:
  - NUA320 - GERONTOLOGICAL NURSING (3)
  - NUA325 - PATHO & PHARM I (4)
  - NUA335 - HEALTH ASSESSMENT (5)
  - NUA345 - FOUNDATIONS IN NURSING (6)

## **NUA320 - GERONTOLOGICAL NURSING**

### **Long Course Title**

GERONTOLOGICAL NURSING

### **Course Description**

This course is designed to focus on current physical and social aspects of the aging process and older adults. The nursing process is used throughout the content. The focus is on caring for older adults and how they are a unique and specialty population.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA320L - CLINICAL IMMERSION
  - Concurrently enrolled in:
    - NUA315 - CONCEPTS IN NURSING (3)
    - NUA325 - PATHO & PHARM I (4)
    - NUA335 - HEALTH ASSESSMENT (5)
    - NUA345 - FOUNDATIONS IN NURSING (6)

**NUA320L - CLINICAL IMMERSION****Long Course Title**

CLINICAL IMMERSION

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUA320 - GERONTOLOGICAL NURSING (3)

**NUA325 - PATHO & PHARM I****Long Course Title**

PATHOPHYSIOLOGY / PHARMACOLOGY I

**Course Description**

This course is the first of a two-part sequence where students analyze deviations from normal physiological functions and explore pathologies that contribute to disease processes. Students build on previous knowledge of anatomy and physiology, and microbiology,. Pharmacological concepts including dosage calculation, proper prescriber order management along with foundational components including normal/abnormal organ systems and treatment modalities are examined concurrently. Emphasis is placed on the application of drug therapies, and the nurse's role in optimizing safe pharmacological treatment using the nursing process.

**Credits**

4

**Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

**Corequisites**

- Concurrently enrolled in:
  - NUA315 - CONCEPTS IN NURSING (3)
  - NUA320 - GERONTOLOGICAL NURSING (3)
  - NUA335 - HEALTH ASSESSMENT (5)
  - NUA345 - FOUNDATIONS IN NURSING (6)

## **NUA335 - HEALTH ASSESSMENT**

### **Long Course Title**

HEALTH ASSESSMENT

### **Course Description**

This course focuses on holistic assessment of culturally diverse clients across the life span. Communication & psychomotor skills are developed in clinical laboratory settings with an emphasis on normal findings and health promotion.

### **Credits**

5

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA335L - CLINICAL IMMERSION
  - Concurrently enrolled in:
    - NUA315 - CONCEPTS IN NURSING (3)
    - NUA320 - GERONTOLOGICAL NURSING (3)
    - NUA325 - PATHO & PHARM I (4)
    - NUA345 - FOUNDATIONS IN NURSING (6)

## **NUA335L - CLINICAL IMMERSION**

### **Long Course Title**

CLINICAL IMMERSION

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUA335 - HEALTH ASSESSMENT (5)

## **NUA345 - FOUNDATIONS IN NURSING**

### **Long Course Title**

FOUNDATIONS IN NURSING

### **Course Description**

This course will begin the process of learning foundational nursing skills to be used in nursing practices. Psychomotor nursing skills need to assist individuals meet basic human needs. Laboratory and clinical experiences are included.

### **Credits**

6

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA345L - CLINICAL IMMERSION
  - Concurrently enrolled in:
    - NUA315 - CONCEPTS IN NURSING (3)
    - NUA320 - GERONTOLOGICAL NURSING (3)
    - NUA325 - PATHO & PHARM I (4)
    - NUA335 - HEALTH ASSESSMENT (5)

## **NUA345L - CLINICAL IMMERSION**

### **Long Course Title**

CLINICAL IMMERSION

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUA345 - FOUNDATIONS IN NURSING (6)

## **NUA351 - EVIDENCE BASED NURSING**

### **Long Course Title**

EVIDENCE BASED NURSING

### **Course Description**

This course explores various models of inquiry used in nursing science and fosters application of the best clinical evidence into practice in order to promote improvement in healthcare experiences and patient outcomes.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Concurrently enrolled in:
  - NUA355 - PATHO & PHARM II (4)
  - NUA365 - COMMUNITY BEHAVIORAL HEALTH (4)
  - NUA375 - MEDICAL-SURGICAL NURSING (8)

## **NUA355 - PATHO & PHARM II**

### **Long Course Title**

PATHOPHYSIOLOGY/PHARMACOLOGY II

### **Course Description**

This course is the second of a two-part sequence where students analyze deviations from normal physiological functions and explore pathologies that contribute to disease processes. The pharmacology portion centers on the treatment of disease and illness processes through application of drug therapies. The nurse's role in optimizing care and promoting outcomes through safe pharmacological management and comprehensive care planning are addressed.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Concurrently enrolled in:
  - NUA351 - EVIDENCE BASED NURSING (3)
  - NUA320 - GERONTOLOGICAL NURSING (3)
  - NUA365 - COMMUNITY BEHAVIORAL HEALTH (4)
  - NUA375 - MEDICAL-SURGICAL NURSING (8)

## **NUA365 - COMMUNITY BEHAVIORAL HEALTH**

### **Long Course Title**

COMMUNITY BEHAVIORAL HEALTH

### **Course Description**

This course introduces core concepts of social and behavioral determinates necessary to facilitate an understanding of how they influence the health of individuals, communities, and populations. Theory and practice are directed toward promotion, maintenance, and restoration of health in individuals experiencing disruptions.

### **Credits**

4

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA365L - CLINICAL IMMERSION
  - Concurrently enrolled in:
    - NUA351 - EVIDENCE BASED NURSING (3)
    - NUA355 - PATHO & PHARM II (4)
    - NUA375 - MEDICAL-SURGICAL NURSING (8)

## **NUA365L - CLINICAL IMMERSION**

### **Long Course Title**

CLINICAL IMMERSION

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUA365 - COMMUNITY BEHAVIORAL HEALTH (4)

## **NUA375 - MEDICAL-SURGICAL NURSING**

### **Long Course Title**

MEDICAL-SURGICAL NURSING

### **Course Description**

This course focuses on the application of the nursing process in the collaborative nursing management of adult clients experiencing simple to complex physiological health alterations.

### **Credits**

8

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA375L - CLINICAL IMMERSION
  - Concurrently enrolled in:
    - NUA351 - EVIDENCE BASED NURSING (3)
    - NUA355 - PATHO & PHARM II (4)
    - NUA365 - COMMUNITY BEHAVIORAL HEALTH (4)

## **NUA375L - CLINICAL IMMERSION**

### **Long Course Title**

CLINICAL IMMERSION

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUA375 - MEDICAL-SURGICAL NURSING (8)

## **NUA460 - COMPLEX CARE NURSING**

### **Long Course Title**

COMPLEX CARE NURSING

### **Course Description**

This course explores the evidence-based collaborative nursing management of clients experiencing complex physiological health alterations. Clinical experiences will provide opportunities for advanced clinical reasoning in the acute and critical care environments.

### **Credits**

5

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA460L - CLINICAL IMMERSION (0)
  - Concurrently enrolled in:
    - NUA351 - EVIDENCE BASED NURSING (3)
    - NUA355 - PATHO & PHARM II (4)
    - NUA365 - COMMUNITY BEHAVIORAL HEALTH (4)
    - NUA375 - MEDICAL-SURGICAL NURSING (8)

## **NUA460L - CLINICAL IMMERSION**

### **Long Course Title**

CLINICAL IMMERSION

### **Course Description**

Clinical Component for NUA 460.

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUA460 - COMPLEX CARE NURSING (5)



**NUA470 - MATERNAL/PEDIATRIC NURSING****Long Course Title**

MATERNAL/PEDIATRIC NURSING

**Course Description**

This course uses a family centered approach to health promotion and health alterations of the family during pregnancy, childbirth, and in children from birth through adolescence.

**Credits**

4

**Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

**Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA470L - CLINICAL IMMERSION
  - Concurrently enrolled in:
    - NUA475 - LEADERSHIP IN NURSING (8)
    - NUA485 - INTEGRATED CONCEPTS (2)

**NUA470L - CLINICAL IMMERSION****Long Course Title**

CLINICAL IMMERSION

**Credits**

0

**Corequisites**

- Concurrently enrolled in:
  - NUA470 - MATERNAL/PEDIATRIC NURSING (4)

## **NUA475 - LEADERSHIP IN NURSING**

### **Long Course Title**

LEADERSHIP IN NURSING

### **Course Description**

The focus of this course is the leadership and management functions of professional nursing. Essential skills are communication, interprofessional collaboration, delegation, coordination, and the application of evidence-based practice models.

### **Credits**

8

### **Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

### **Corequisites**

- Complete all of the following
  - Concurrently enrolled in:
    - NUA475L - CLINICAL IMMERSION (0)
  - Concurrently enrolled in:
    - NUA460 - COMPLEX CARE NURSING (5)
    - NUA470 - MATERNAL/PEDIATRIC NURSING (4)
    - NUA485 - INTEGRATED CONCEPTS (2)

## **NUA475L - CLINICAL IMMERSION**

### **Long Course Title**

CLINICAL IMMERSION

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - NUA475 - LEADERSHIP IN NURSING (8)

**NUA485 - INTEGRATED CONCEPTS****Long Course Title**

INTEGRATED CONCEPTS

**Course Description**

The purpose of this course is to facilitate the synthesis of knowledge and application of critical thinking to decisions about patient care. Test taking skills and time management concepts will be applied in preparation for the NCLEX-RN licensure exam.

**Credits**

2

**Prerequisites**

- Complete all of the following
  - Admitted to: BSN NURSING
  - Nursing Accelerated (NUA) Concentration

**Corequisites**

- Concurrently enrolled in:
  - NUA460 - COMPLEX CARE NURSING (5)
  - NUA470 - MATERNAL/PEDIATRIC NURSING (4)
  - NUA475 - LEADERSHIP IN NURSING (8)

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## Nursing Science

**NUS710 - INDEPENDENT STUDY****Long Course Title**

INDEPENDENT STUDY

**Course Description**

This course is for Joint PhD Nursing Science program students who are interested in an independent study option to identify additional literature synthesis, planning, implementation, and evaluation of related phenomena of special interest to advance nursing science.

**Credits**

1 - 6

**Prerequisites**

- Admitted to: PHD NUSC

**NUS713 - SPECIAL TOPICS****Long Course Title**

SPECIAL TOPICS

**Course Description**

This course is for Joint PhD Nursing Science program students who are seeking opportunities to explore special topics that expand their knowledge and/or skills to conduct sponsored research projects. The focus of this three-credit hour didactic course will be developed in collaboration between the faculty and student(s).

**Credits**

3

**Prerequisites**

- Admitted to: PHD NUSC

**NUS741 - BSN-PHD RESEARCH SEMINAR I****Long Course Title**

BSN-PHD RESEARCH SEMINAR I

**Course Description**

The purpose of this course is to prepare BSN-PHD students with the foundational skills of deep reading, comprehensive literature review and critique, critical thinking, and writing skills necessary for successful advancement in a doctoral program. This course will further help students by providing more individualized support and structure to facilitate successful progression through the PhD program.

**Credits**

1

**NUS742 - BSN-PHD RESEARCH SEMINAR II****Long Course Title**

BSN-PHD RESEARCH SEMINAR II

**Course Description**

The purpose of this course is to aid BSN-PhD students in developing skills to assess scientific rigor, develop an argument, critique published research, professionally present (verbally and written) critique findings, develop a manuscript for publication, and will provide an opportunity to obtain hands on research experience. This course will further help students by providing more individualized support and structure to facilitate successful progression through the PhD program.

**Credits**

1

**NUS743 - BSN-PHD RESEARCH SEMINAR III****Long Course Title**

BSN-PHD RESEARCH SEMINAR III

**Course Description**

The purpose of this course is to prepare BSN-PhD students with the foundational skills of systematically appraising the literature to develop an appropriate and comprehensive significance section, analyzing health policy that directly relates to the students' research areas of interest, and evaluating research methodology and accompanying statistical analyses. These are important for successful advancement in a doctoral program. This course will further help students by providing more individualized support and structure to facilitate successful progression through the PhD program.

**Credits**

1

**NUS750 - PHILOSOPHY OF SCIENCE****Course Description**

The purpose of this course is to explore the evolution of philosophy and science. Epistemology, knowledge generation, knowledge acquisition, and ways of knowing will be examined. Scientific inquiry will include reasoning, logic, and persuasive argument development.

**Credits**

3

**NUS752 - INFORMATICS & ANALYTICS NUR SC****Long Course Title**

INFORMATICS AND ANALYTICS FOR NURSE SCIENTISTS

**Course Description**

The purpose of this course is to prepare nurse scientists to use informatics, electronic tools, and healthcare technologies for the purposes of nursing research. The course will focus on the use of informatics in the data management of individuals, groups and organizations as the nurse scientist plans and executes a program of research.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - NUS758 - QUANTITATIVE RESEARCH METHODS (3)
  - NUS760 - STATISTICS I (3)

## **NUS754 - ETHICAL CONDUCT LGL RESEARCH**

### **Long Course Title**

ETHICAL AND LEGAL ISSUES IN RESEARCH

### **Course Description**

The purpose of this course is to introduce the student to doctoral scholarship in support of beginning a program of responsible conduct of research. This course explores current ethical and legal issues in the science of nursing research. The course will delve into best practices in research design with regard to ethics, authorship, data management and record keeping, intellectual property and ownership of data, and human subjects research. In addition, the course will cover conflicts of interest, mentoring, collaborations, peer review, research misconduct, and current ethical issues in research.

### **Credits**

3

## **NUS756 - APPL OF THEORETICAL MODELS**

### **Long Course Title**

APPLICATION OF THEORETICAL MODELS

### **Course Description**

The purpose of this course is to provide students a foundation for contributing to theory development processes, analyzing and critiquing theoretical foundations of research, and applying theoretical models to nursing research. This course addresses the relationship between theory and research and provides an understanding of the use of theoretical models and conceptual foundations to guide nursing research and practice.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS750 - PHILOSOPHY OF SCIENCE (3)

## **NUS758 - QUANTITATIVE RESEARCH METHODS**

### **Course Description**

This course provides students with foundational knowledge and skills in the development of experimental and nonexperimental quantitative designs. Topics will include training in the choice of research questions/aims/hypotheses and a responsive approach; the development of an ethical, strategic design; the implementation of a strategic sampling plan; the choice of suitable measurements (reliable and valid) and analytic plans; issues in research such as treatment fidelity; and the drafting of research proposals. Additional content will briefly introduce more advanced concepts such as mixed methods research or community-based participatory research. Special emphasis will be placed on clinical nursing designs, such as repeated-measures intervention studies.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS750 - PHILOSOPHY OF SCIENCE (3)

## **NUS760 - STATISTICS I**

### **Course Description**

The purpose of this course is to provide the student with the skills to conduct and interpret statistical data. Emphasis will be placed on describing types of variables, testing hypotheses, selecting appropriate parametric and nonparametric statistical tests, analyzing data, and interpreting results.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS758 - QUANTITATIVE RESEARCH METHODS (3)

## **NUS762 - HLTH POLICY UNDERSERVED POPUL**

### **Long Course Title**

HEALTH CARE POLICY FOR RURAL AND MEDICALLY UNDERSERVED POPULATIONS

### **Course Description**

The purpose of this course is to explore the policy environment that influences and shapes public health and health care service delivery, including rural and medically underserved communities. Students will develop skills, techniques, and approaches to identify gaps, critically analyze and research health related issues. Utilization and delivery of data to promote and impact healthcare policy changes will be an important measure of outcome. Students will develop the ability and confidence to critically assess current health policy issues in a thoughtful, comprehensive and rigorous manner and to engage in the policy process.

### **Credits**

3

## **NUS764 - SCIENTIFIC WRITING**

### **Course Description**

The purpose of this course is to develop writing skills to produce scientific writing that is clear, concise, and logical. This course will also explore the publication to include abstract and manuscript development and the submission process. Additional pathways to dissemination of nursing content will be explored as well.

### **Credits**

3

## **NUS766 - EPIDEMIOLOGY RURAL POP**

### **Long Course Title**

EPIDEMIOLOGY IN RURAL AND MEDICALLY UNDERSERVED POPULATIONS

### **Course Description**

The purpose of this course is to introduce epidemiological methods for measuring population health, designing and implementing observational and experimental studies, critically reading the public health literature, and applying research findings to global and community health.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS760 - STATISTICS I (3)

## **NUS768 - STATISTICS II**

### **Course Description**

This course provides advanced coursework in applied statistical approaches to data management and analysis. With an emphasis on multivariate statistical approaches, the purpose of the course is to help nursing students to develop improved skills in conceptualizing, executing, analyzing, and interpreting advanced analytic strategies and to enhance their ability to propose strong, tailored analytic approaches for specific study designs and research aims. Students will also gain proficiency in using R software, a freely available and powerful statistical package. They will enhance their knowledge of regression, OLS, ANOVA, MANOVA/MANCOVA, discriminant analysis, exploratory and confirmatory factor analysis, structural equation modeling, multilevel modeling, and advanced categorical approaches. Understanding the mathematics, logic, application of these techniques is emphasized.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS760 - STATISTICS I (3)

## **NUS770 - GRANT WRITING**

### **Course Description**

The purpose of this course is to prepare students in the foundations of writing grants for federal external funding. This course will help students identify a step-wise process to develop a grant proposal through federal funding sources. Strategies for successful grant writing include identifying funding sources for the topic, writing a competitive grant application, developing a collaborative team of researchers for the project, and understanding the review process.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS764 - SCIENTIFIC WRITING (3)

## **NUS772 - QUALITATIVE RESEARCH METHODS**

### **Course Description**

The purpose of this course is to assist the student in using selected qualitative research methods. Learning modules will explore qualitative approaches, sampling, data collection, data analysis and dissemination. The course will review and explore the use of technology to assist the qualitative researcher.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS750 - PHILOSOPHY OF SCIENCE (3)
  - NUS756 - APPL OF THEORETICAL MODELS (3)
  - NUS758 - QUANTITATIVE RESEARCH METHODS (3)



## **NUS776 - ADVANCED RESEARCH METHODS**

### **Course Description**

The purpose of this course is to assist students in developing the knowledge and skills to design a mixed methods research (MMR) study. MMR is an advanced method for collecting, analyzing, and "mixing" both quantitative and qualitative data within a single study to understand a research problem more completely.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS752 - INFORMATICS & ANALYTICS NUR SC (3)
  - NUS758 - QUANTITATIVE RESEARCH METHODS (3)
  - NUS760 - STATISTICS I (3)
  - NUS768 - STATISTICS II (3)
  - NUS772 - QUALITATIVE RESEARCH METHODS (3)

## **NUS780 - INTRODUCTION TO OMICS**

### **Course Description**

The purpose of this course is to introduce the revolution of omics and discuss the role nurse scientists can play in precision health development. Nurse scientists are in a position to provide a unique contribution to person-centered health approaches by broadening their understanding of molecular advances to improve health outcomes. A variety of different omics will be explored and the practical advantages, limitations, and challenges in individualized health promotion will be discussed.

### **Credits**

3

## **NUS781 - OMICS IN NURSING RESEARCH**

### **Course Description**

The purpose of this course is to provide an overview of advanced concepts of omics research by utilizing a biobehavioral systems approach in nursing science. The National Institute of Nursing Research's strategic plan for Genomic Nursing Science is used as the framework for integrating omics and nursing research. Practical application in omics theories, methodologies, technology, bioinformatics, and responsible conduct of research is discussed. Additionally, resources in building capacity for the next generation of omics scientists are reviewed.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS780 - INTRODUCTION TO OMICS (3)

**NUS782 - CURRIC DEV PROG EVL FOR NUR ED****Long Course Title**

CURRICULUM DEVELOPMENT AND PROGRAM EVALUATION FOR NURSE EDUCATORS

**Course Description**

The purpose of this course is to examine the procedures for designing, implementing, and evaluating nursing education curriculum. The process will be examined beginning with the program mission. Educational theories, philosophy, concepts, and program evaluation will be explored. The nurse educator's role in curriculum design and program evaluation is assessed.

**Credits**

3

**NUS783 - INSTR MTHD ASSESS IN NURS ED****Long Course Title**

INSTRUCTIONAL METHODS AND ASSESSMENT IN NURSING EDUCATION

**Course Description**

The purpose of this course is to discover teaching styles and implement instructional technologies to promote learning in diverse populations of students. Throughout the semester, students will explore didactic and clinical learning activities and evaluation strategies to demonstrate transfer of learning.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS782 - CURRIC DEV PROG EVL FOR NUR ED (3)

**NUS784 - APPLD TECH HEALTHCARE RES****Long Course Title**

APPLIED TECHNOLOGY IN HEALTHCARE RESEARCH

**Course Description**

The purpose of this course is to apply concepts associated with data analytic methods and the use of burgeoning technologies in healthcare. The course prepares the nurse scientist to engage with other researchers in the areas of data analytics, simulation, telehealth, and robotics. The appropriate integration of health care technologies to support nursing research will be emphasized.

**Credits**

3

## **NUS785 - R&D INNOV HEALTHCARE TECH**

### **Long Course Title**

RESEARCH AND DEVELOPMENT (R&D) OF INNOVATIVE HEALTH CARE TECHNOLOGY

### **Course Description**

The purpose of this course is to develop the scientific skills to move an idea from concept to product following a research and development (R&D) process. The course prepares the nurse scientist to engage with researchers inside and outside health care fields, solicit input from end-users early and often, create patentable intellectual property, and fund the development of products with federal grants or investors.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in all of the following:
    - NUS784 - APPLD TECH HEALTHCARE RES (3)
  - Instructor Permission

## **NUS798 - COMPETENCY ASSESSMENT**

### **Long Course Title**

COMPETENCY ASSESSMENT

### **Course Description**

All students enrolled in the Joint Nursing Science PhD program are required to register for this course at the beginning of the semester during which they take the comprehensive examination. A grade will be determined entirely by an assessment of the student's performance on the comprehensive examination, and the grade will be either satisfactory/unsatisfactory. The course may be repeated once and must be passed if the student is to progress to dissertation.

### **Credits**

0

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS776 - ADVANCED RESEARCH METHODS (3)

## **NUS799 - DOCTORAL DISSERTATION**

### **Long Course Title**

DOCTORAL DISSERTATION

### **Course Description**

This independent research course partially fulfills required doctoral level research dissertation hours toward the PhD in the student's field. A minimum of 24 dissertation hours are required, at 1-12 hours per semester. The course is conducted under the guidance of the PhD chair. After completing requirements for admission to candidacy, the student registers for a minimum of 3 hours per semester in this course, each semester, until all dissertation requirements have been approved. Material covered will be of an advanced nature aimed at providing doctoral students with an understanding of the latest research and current developments within the field. Discussion and advisor guidance will be focused on readings of research articles and development of research methodology with the aim of producing an original research contribution that represents a novel development in the field, or a novel perspective on a pre-existing topic in the field.

### **Credits**

0 - 9

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - NUS798 - COMPETENCY ASSESSMENT

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## **Optical Science Engineering**

### **OSE534 - OPTICAL FIBER COMMUNICATIONS**

#### **Course Description**

Introduction to optical fibers and their transmission characteristics, optical fiber measurements, sources and detectors, noise considerations for digital and analog communications, optical fiber systems.

#### **Credits**

3

#### **Equivalent Course(s)**

EE534 - OPTICAL FIBER COMMUNICATIONS

### **OSE541 - GEOMETRICAL OPTICS**

#### **Course Description**

Foundations and physics of geometrical optics, Fermat's principles and Huygen wavelets, refraction and reflection. The many forms of Snell's Law. Optical path lengths, geometrical wavefronts and rays. Ray tracing, ynu-chart and matrix methods. Gaussian imagery and paraxial optics, conjugate elements, cardinal points, and image-object relations. Stops and pupils, chief and marginal rays, vignetting, and the optical or Lagrange invariant. The y-y bar diagram, design of common systems: objectives, magnifiers, microscopes, collimators and detectors. Optical glasses and chromatic aberrations, wavefront and transverse aberrations, spot diagrams and ray fan plots.

#### **Credits**

3

#### **Equivalent Course(s)**

OSE541 - GEOMETRICAL OPTICS  
PH541 - GEOMETRICAL OPTICS

## **OSE542 - PHYSICAL OPTICS**

### **Course Description**

Scalar and electromagnetic waves, polarization, coherence, reflection and refraction; two beam and multiple beam interference, interferometers, Fabry-Perots, thin films, diffraction, and absorption and dispersion. (Same as OSE 542 and EE 542.) Fall, Spring.

### **Credits**

3

### **Equivalent Course(s)**

EE542 - PHYSICAL OPTICS  
PH542 - PHYSICAL OPTICS

## **OSE546 - RADIOMETRY, DETECTORS & SOURCE**

### **Course Description**

Theory and practice of radiometry and photometry. Blackbody radiation and Lambertian sources. Propagation of radiant energy in free space and through optical systems. Detector classes, responsivity, bandwidth and noise, power spectral density, properties of sources, photon noise.

### **Credits**

3

## **OSE555 - INTRO QUANTUM MECHANICS I**

### **Course Description**

Waves and particles; Bohr's model of the atom; de Broglie waves, wave packets and the uncertainty principle; postulates of quantum mechanics; Schroedinger's equation; simple systems in one, two and three dimensions; the hydrogen atom.

### **Credits**

3

### **Equivalent Course(s)**

CH553 - INTRO QUANTUM MECH I  
MTS651 - INTRO QUANTUM MECH I  
PH551 - QUANTUM MECHANICS I

## **OSE570 - OPT & PHOTONIC SYSTEMS DESIGN**

### **Course Description**

Review of paraxial optics, ray tracing codes, aberration and diffraction calculations; acousto- and electro-optic modulators, spatial light modulators; fibers, fiber splicers and connectors; gratings and diffractive optical elements; laser and light emitting diodes, photodetectors and CCD arrays; correlator systems; optical communication networks; signal processing systems design.

### **Credits**

3

### **Equivalent Course(s)**

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PH570 - OPT & PHOTONIC SYSTEMS DESIGN

## **OSE632 - FOURIER OPTICS**

### **Course Description**

Introducing the optical system as an invariant linear system, convolution, Sommerfield's diffraction integral, Fourier Transform, angular spectrum, coherent and incoherent imaging, optical transfer function.

### **Credits**

3

### **Equivalent Course(s)**

EE632 - FOURIER OPTICS

PH632 - FOURIER OPTICS

## **OSE645 - LASERS**

### **Course Description**

Resonant optical cavities. Atomic radiation. Laser oscillation and amplification. General characteristics of lasers. Laser excitation. Semiconductor lasers. Gas discharge phenomenon. Transition rates. Spectroscopy of common lasers. Detection of optical radiation.

### **Credits**

3

### **Equivalent Course(s)**

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PH645 - LASERS I

## **OSE653 - OPTICAL TESTING LAB**

### **Course Description**

Provides students with hands-on experience via the in-depth testing of an aerial reconnaissance photographic lens. The main measurement tools are a 168-inch Collimator/T-Bar nodal slide for image plane measurements, and a Fizeau phase shifting interferometer for exit pupil measurements. Measurements include: effective focal length, F-number, axial color, spherical aberration, field curvature, distortion, astigmatism, transmission, relative illumination falloff, resolution, modulation transfer function, on-axis interferometry, fringe analysis.

### **Credits**

1

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - OSE654 - OPTICAL TESTING (3)

## **OSE654 - OPTICAL TESTING**

### **Course Description**

Spherometry; refractive index measurements; optical bench measurements of imaging systems via T-bar nodal slide (effective focal length, f-number, axial color, field curvature and distortion, transverse ray aberrations); illumination falloff; image resolution tests (finite object); modulation transfer function; star image testing; knife edge tests; Hartmann tests; Fizeau interferometer and testing configurations; null lens testing of aspheres; wavefront measurements (point diffraction interferometer, radial shear interferometer).

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OSE541 - GEOMETRICAL OPTICS (3)
  - OSE542 - PHYSICAL OPTICS (3)

### **Equivalent Course(s)**

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PH654 - OPTICAL TESTING

## **OSE655 - APPLIED QUANTUM MECHANICS**

### **Course Description**

Application of quantum mechanics in solid state, electronics, materials science and optics. Topics to include: Hydrogen atom and molecule, excitons, phonons, Bloch's theorem, periodic boundary conditions, electrons and holes, band structure of simple semiconductors, dipole transitions, optical constants, absorption and emission processes, introduction to device physics.

### **Credits**

3

### **Equivalent Course(s)**

PH652 - QUANTUM MECHANICS II

## **OSE656 - LENS DESIGN**

### **Course Description**

Design of refractive imaging systems. Skills acquired include thin lens pre-design, first and third order analytical methods, and computer-based design using Zemax. Designs include: Wollaston and Chevalier landscape lenses, a 10X microscope objective, the Rapid Rectilinear and Celor lenses, Cooke triplet and Petzval portrait lenses, and a telephoto lens.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - EE541 - OPTICS I (3)
    - OSE541 - GEOMETRICAL OPTICS (3)
    - PH541 - GEOMETRICAL OPTICS (3)
  - Instructor Permission

## **OSE670 - OPT DESIGN & MANUFACTURING**

### **Course Description**

Practical aspects of optomechanical design, material selection, fabrication and integration of precision optical components and systems for commercial, space, and military application. Topics include: fixture design, tolerance analysis, machining methods, thermal stabilization, integrated computer-aided design and analysis, diamond machining, finishing and plating techniques.

### **Credits**

3

### **Equivalent Course(s)**

PH670 - OPTOMECHANICAL DESIGN & MANUF

## **OSE690 - SEL TOPICS IN OPT SCI & ENGR**

### **Course Description**

Sample topics include optical thin films and optical instrument systems analysis.

### **Credits**

1 - 3

## **OSE742 - OPTICAL SCATTERING THEORY**

### **Course Description**

Scattering and absorption of radiation by particles with spherical symmetry and arbitrary shapes described using Maxwell's equations, vector Helmholtz equations, the Jones and Mueller calculus, and numerical techniques.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - AES561 - ATMOSPHERIC RADIATION I (3)
  - EE609 - ELECTROMAGNETIC FIELD THEORY (3)
  - PH631 - ELECTROMAGNETIC THEORY I (3)

## **OSE755 - QUANTUM DEVICES**

### **Course Description**

Quantum aspects of optical, electronic, and semiconductor devices approached from a phenomenological/physical point of view. Topics will include: Quantum well devices, optical modulators, optical detectors, quantum Stark effects, electro-optic devices, high speed optical devices, frequency chirping in high speed devices and system applications.

### **Credits**

3

### **Equivalent Course(s)**

PH733 - QUANTUM DEVICES



**OSE790 - SEL TOPICS IN OPT SCI & ENGR****Course Description**

Sample topics include optical thin films and optical instrument systems analysis.

**Credits**

1 - 3

**OSE792 - OSE SEMINAR****Course Description**

This "brown bag" monthly seminar series is conducted jointly with the Huntsville Electro-Optical Society which sponsors the speakers. Presentations are given on a diverse range of optics and optics-related topics. All OSE students are expected to attend three of these seminars per semester

**Credits**

0

**OSE799 - DOCTORAL DISSERTATION****Course Description**

Required each semester student is enrolled and receiving direction on a doctoral dissertation. The following optics courses are also available to students in the OSE program. See listings under indicated departments.

**Credits**

3 - 9

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## Optics

**OPT341 - GEOMETRICAL OPTICS****Course Description**

Introduces geometrical optics. The nature of light, basic radiometry, rays and waves, Fermat's principle, Snell's law, thin and thick lenses, paraxial rays, ray transfer matrix and ray tracing, optical imaging and imaging system design, aberrations, optical instrumentation, prisms, and dispersion.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH113 - GEN PHYSICS W/CALC III (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH305 - MATH METHODS IN PHYSICS (3)

## **OPT342 - PHYSICAL OPTICS**

### **Course Description**

Electromagnetic waves, superposition of waves, interference of light, Young's double slit experiment, Michelson interferometer, Fabry-Perot interferometer, coherence, diffraction gratings, polarization and its matrix treatment, and polarization generation. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OPT341 - GEOMETRICAL OPTICS (3)

## **OPT411 - OPTICS LAB**

### **Course Description**

Lab course supporting the introductory optics sequence OPT 341 and OPT 342. Basic laboratory techniques in optics, such as optical alignment, imaging, interferometry, refractometry, and polarimetry, as well as fundamental optics concepts, such as the cardinal points, aberrations, dispersion, interference, diffraction, and polarization. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - OPT341 - GEOMETRICAL OPTICS (3)

### **Corequisites**

- Concurrently enrolled in:
  - OPT342 - PHYSICAL OPTICS (3)

## **OPT441 - OPTICAL SYSTEMS**

### **Course Description**

Intermediate geometrical optics, first-order optics, linear transformations, paraxial optics, reflection and transmission at an interface, polarized light, Jones and Mueller calculi, matrix methods, ray tracing, apertures and stops, third order optics and aberrations. Offered Fall, even years.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OPT342 - PHYSICAL OPTICS (3)

## **OPT442 - INTERFERENCE & DIFFRACTION**

### **Course Description**

Two beam interference, multiple beam interference, optical testing. Fraunhofer diffraction, Fresnel diffraction, the Fourier transform, Fourier methods in optics, Coherence, Holography.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OPT342 - PHYSICAL OPTICS (3)

## **OPT444 - OPTOELECTRONICS**

### **Course Description**

Reviews polarized light, propagation and modulation of light using effects of electro and acousto optics, Kerr, and Faraday. Photo-detection, signal processing, and signal-to-noise ratios. Design/analysis of beam scanners, various optical spectrum analyzers, sensors, and communication systems.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OPT342 - PHYSICAL OPTICS (3)

### **Equivalent Course(s)**

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EE451 - OPTOELECTRONICS

## **OPT445 - INTRODUCTION TO LASERS**

### **Course Description**

Introduces concepts and principles of lasers. Stimulated emission, light amplification, optical pumping, optical resonator theory, cavity modes, gas lasers, solid state lasers, laser applications, Gaussian beams, coherence, and holography. Offered Fall, odd years.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH432 - INTERM ELECTRIC & MAGNETISM II (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)

## **OPT446 - RADIOMETRY, DETECTORS, SOURCES**

### **Course Description**

Theory and practice of radiometry and photometry. Blackbody radiation and Lambertian sources. Propagation of radiant energy in free space and through optical systems. Detector classes, responsivity, bandwidth and noise. Power spectral density, properties of sources, photon noise.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - OPT342 - PHYSICAL OPTICS (3)
  - PH112 - GEN PHYSICS W/CALC II (3)

## **OPT447 - POLARIZED LIGHT & POLARIMETRY**

### **Course Description**

Linear, circular, and elliptical polarization of light. Mueller and Jones calculi, Stokes vectors, measuring polarized light, polarization properties of crystals and thin films, polarization ray tracing. Offered Fall, odd years.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OPT342 - PHYSICAL OPTICS (3)

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# **Philosophy**

## **PHL101 - INTRODUCTION TO PHILOSOPHY**

### **Course Description**

Introduction to philosophical reflection focusing upon central problems in the major branches of the western tradition: metaphysics, epistemology and value theory.

### **Credits**

3

### **Charger Foundations**

Area II: Humanities

**PHL102 - INTRO TO ETHICS****Long Course Title**

INTRODUCTION TO ETHICS

**Course Description**

Major ethical positions in both classical and modern thought. The course may include a consideration of case studies drawn from practical contexts in engineering, medicine and other areas.

**Credits**

3

**Charger Foundations**

Area II: Humanities

**PHL103 - INTRODUCTION TO LOGIC****Course Description**

Methodology of formal and informal reasoning.

**Credits**

3

**Charger Foundations**

Area II: Humanities

**PHL150 - TECH, SCIENCE & HUMAN VALUES****Long Course Title**

TECHNOLOGY, SCIENCE & HUMAN VALUES

**Course Description**

A philosophical examination of the intersection of human values with science and technology. Questions include: what exists, the nature and extent of knowledge, and moral problems posed by technical and scientific change.

**Credits**

3

**Charger Foundations**

Area II: Humanities

**PHL220 - CRIT THINKING FOR INTEL ANALYS****Long Course Title**

CRITICAL THINKING FOR INTELLIGENCE ANALYSIS

**Course Description**

Examines critical reasoning strategies designed to correct cognitive biases and improve tradecraft skills in the context of intelligence analysis.

**Credits**

3

### **PHL301 - ANCIENT PHILOSOPHY**

#### **Course Description**

Survey of classical philosophy from the Pre-Socratics through Aristotle.

#### **Credits**

3

#### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

### **PHL302 - MODERN PHILOSOPHY**

#### **Course Description**

Survey of the British and Continental traditions from Descartes through Kant.

#### **Credits**

3

#### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

### **PHL303 - CONTINENTAL PHILOSOPHY**

#### **Course Description**

Examination of important trends in the Continental tradition from nineteenth through twenty-first century thought.

#### **Credits**

3

#### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL310 - PHILOSOPHY OF ART**

### **Course Description**

Major aesthetic theories of the western tradition, may include visual or non-visual arts.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL311 - PHILOSOPHY OF SCIENCE**

### **Course Description**

Critical assessment of the historical and logical foundations of the natural and theoretical sciences.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL312 - AMERICAN PHILOSOPHY**

### **Course Description**

Survey of American thought with emphasis upon the development of pragmatism in the work of Peirce, James, and Dewey.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL314 - ASIAN PHILOSOPHY**

### **Course Description**

Survey of philosophical traditions from Asia, such as various schools of Buddhism and Hinduism, Confucianism, Daoism. Topics may include: conceptions of human nature and the good life, the nature of the self and its relation to society, comparisons to philosophies from Europe and North America.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL317 - PHILOSOPHY OF MIND**

### **Course Description**

A philosophical examination of a range of models, theories, and arguments concerning the nature of mind and its relationship to the physical world.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL320 - SYMBOLIC LOGIC**

### **Course Description**

Symbolic deductive logic, including propositional calculus (truth-functional logic), predicate calculus (propositional functions and quantification), and the logic of relations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:

- PHL103 - INTRODUCTION TO LOGIC (3)



**PHL330 - CLASSI POLITI PHILOSOPHY****Long Course Title**

CLASSICAL POLITICAL PHILOSOPHY

**Course Description**

Careful analysis of the roots of political inquiry in selected works of ancient and medieval political philosophers. Major themes include the search for a just social order, the proper relationship between the citizen and the state, and other fundamental concepts of western political institutions.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
  - PHL102 - INTRO TO ETHICS (3)
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Equivalent Course(s)**

PSC330 - CLASSI POLITI PHILOSOPHY

**PHL332 - MODERN POLITICAL PHILOSO****Long Course Title**

MODERN POLITICAL PHILOSOPHY

**Course Description**

Critical examination of the philosophical foundations for modern politics that emerged from the 15th through the 19th century in western Europe. Major themes include the concepts of individual rights, property, representation, majority rule, limited government, and revolution.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
  - PHL102 - INTRO TO ETHICS (3)
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Equivalent Course(s)**

PSC332 - MODERN POLITICAL PHILOSO

## **PHL335 - FEMINIST PHILOSOPHY**

### **Course Description**

Philosophical examination of issues related to feminism and feminist theory. Topics may include: women in the history of philosophy, contemporary feminist political theory, feminist ethics, feminist epistemology, or gender theory (including racial and sexual identity).

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL337 - PHILOSOPHY OF RACE**

### **Course Description**

Philosophical examination of the nature and importance of race. Topics may include: the debate between essentialist and constructionist views of race, the political importance of race, and the intersection of race and other forms of identity.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL385 - SELECTED TOPICS**

### **Course Description**

Intensive examination of particular problems, periods, or movements in the history of philosophy.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL395 - RESEARCH SEMINAR**

### **Course Description**

Intensive examination of particular problems, periods, or movements in the history of philosophy. Intensive examination of selected topics leading to the preparation of a substantial philosophical paper. Required of all majors. May be taken twice for credit.

### **Credits**

3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL397 - PHILOSOPHY INTERNSHIP**

### **Course Description**

A supervised experience in a professional environment enhanced by a student's background in philosophy. Paid or unpaid.

### **Credits**

1 - 3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Earned a minimum cumulative GPA of 3.0
  - Earned at least 18 hours from:  
Courses from PHL -
  - Department Chair Permission Required

## **PHL399 - DIR STUDY IN PHILOSOPHY**

### **Long Course Title**

DIRECTED STUDY IN PHILOSOPHY

### **Course Description**

Independent study in an area of philosophy selected in consultation with faculty advisor.

### **Credits**

1 - 3

### **Prerequisites**

- Earned at least 3 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course

Courses from PHL -

## **PHL401 - METAPHYSICS**

### **Course Description**

Critical examination of traditional and contemporary responses to questions about the nature of reality.

### **Credits**

3

### **Prerequisites**

- Earned at least 6 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL402 - EPISTEMOLOGY**

### **Course Description**

Investigation of fundamental problems of knowledge such as the relation of knowledge and belief, truth, certainty and skepticism, perception, logic, explanation, and justification

### **Credits**

3

### **Prerequisites**

- Earned at least 6 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL403 - ADV MORAL PHILOSOPHY**

### **Long Course Title**

ADVANCED MORAL PHILOSOPHY

### **Course Description**

Critical examination of significant works in moral and political philosophy such as the relationship between morality and human nature, the individual and the state, and the consequences of actions.

### **Credits**

3

### **Prerequisites**

- Earned at least 6 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL -

## **PHL438 - CONTEMPORARY POLITICAL THOUGHT**

### **Course Description**

Systematic study of recent and current thinking on issues and problems of politics, social theory, and ethics with special attention to the philosophical dimension of these issues and problems.

### **Credits**

3

### **Prerequisites**

- Earned at least 6 hours from:

Except:

- PHL103 - INTRODUCTION TO LOGIC (3)

Must earn minimum grade of D- in any selected course  
Courses from PHL or PSC -

### **Equivalent Course(s)**

PSC438 - CONTEMPORARY POLITICAL THOUGHT

## **PHL599 - SPECIAL TOPICS**

### **Course Description**

Study in an area of philosophy selected in consultation with faculty advisor. Requires approval of instructor.

### **Credits**

1 - 3

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# **Physics**

## **PH100 - CONCEPTUAL PHYSICS**

### **Course Description**

Classical and modern physics survey course. Approach physical laws conceptually and intuitively, with minimal mathematics. Motion, gravitation, energy, electricity and magnetism, quantum mechanics, physics of everyday phenomena, philosophical and historical implications. Offered Spring.

### **Credits**

4

### **Corequisites**

- Concurrently enrolled in:
  - PH100L - CONCEPTUAL PHYSICS LAB

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH100L - CONCEPTUAL PHYSICS LAB**

### **Course Description**

Complements material for PH 100

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - PH100 - CONCEPTUAL PHYSICS (4)

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH101 - GENERAL PHYSICS I**

### **Course Description**

Introductory non-calculus based course using algebra and trigonometry. The basic laws of physics and their application to specific problems. Newtonian mechanics, energy, conservation laws and thermodynamics. Laboratory included. PH 101 and 102 satisfy the laboratory science requirement. Offered Fall

### **Credits**

4

### **Corequisites**

- Concurrently enrolled in:
  - PH101L - GENERAL PHYSICS I LAB

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH101L - GENERAL PHYSICS I LAB**

### **Course Description**

Laboratory for PH 101

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - PH101 - GENERAL PHYSICS I (4)

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH102 - GENERAL PHYSICS II**

### **Course Description**

Continuation of PH 101. Electrostatics, currents, magnetic phenomena, relativity, waves, quantum nature of matter. Laboratory included. Offered Spring.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH101 - GENERAL PHYSICS I (4)

### **Corequisites**

- Concurrently enrolled in:
  - PH102L - GENERAL PHYSICS LAB II

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH102L - GENERAL PHYSICS LAB II**

### **Course Description**

Laboratory for PH 102

### **Credits**

0

### **Corequisites**

- Concurrently enrolled in:
  - PH102 - GENERAL PHYSICS II (4)

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH110 - FRONTIERS IN SCIENCE**

### **Course Description**

Introduces frontiers and problems of modern physical science. Physicists present the role of physics in diverse careers and physics fields. Introduction to physics applications and future employment opportunities motivates students to master skills required in undergraduate studies. Offered Fall. Freshmen physics majors (<30 credit hours), physics minors, and physics major transfers. All others by permission of chair.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Admitted to: BS PHYSICS
  - Admitted to: PH

**PH111 - GEN PHYSICS W/CALCULUS I****Long Course Title**

GENERAL PHYSICS WITH CALCULUS I

**Course Description**

For science and engineering students. Basic laws of physics and their application to specific problems: vectors, Newtonian mechanics, energy, conservation laws, simple harmonic motion, statics, fluids. Offered all terms.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH114 - GENERAL PHYSICS LAB I (1)

**Charger Foundations**

Area III: Natural (Lab) Science

**PH112 - GEN PHYSICS W/CALC II****Long Course Title**

GENERAL PHYSICS WITH CALCULUS II

**Course Description**

Continuation of PH 111. Heat and thermodynamics, basic electricity, electric and magnetic fields. Offered all terms.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH115 - GENERAL PHYSICS LAB II (1)

**Charger Foundations**

Area III: Natural (Lab) Science



**PH113 - GEN PHYSICS W/CALC III****Long Course Title**

GENERAL PHYSICS WITH CALCULUS III

**Course Description**

Continuation of PH 111 and 112. Wave motion, optics, relativity, quantum effects, atomic and nuclear structure, and elementary particles. Offered all terms.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH116 - GENERAL PHYSICS LAB III (1)

**Charger Foundations**

Area III: Natural (Lab) Science

**PH114 - GENERAL PHYSICS LAB I****Course Description**

Laboratory instruction in support of material covered in PH 111. Offered all terms.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - PH111 - GEN PHYSICS W/CALCULUS I (3)

**Charger Foundations**

Area III: Natural (Lab) Science

**PH115 - GENERAL PHYSICS LAB II****Course Description**

Laboratory instruction in support of material covered in PH 112. Offered all terms.

**Credits**

1

**Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - PH112 - GEN PHYSICS W/CALC II (3)

**Charger Foundations**

Area III: Natural (Lab) Science

## **PH116 - GENERAL PHYSICS LAB III**

### **Course Description**

Laboratory instruction in support of material covered in PH 113. Offered all terms.

### **Credits**

1

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - PH113 - GEN PHYSICS W/CALC III (3)

### **Charger Foundations**

Area III: Natural (Lab) Science

## **PH251 - SPECIAL RELATIVITY**

### **Course Description**

Einstein's theory of special relativity. Invariance, geometry of Minkowski spacetime, non-Euclidean geometry, Principle of Relativity, clock synchronization, Lorentz transformations, counter-intuitive effects measured in relative motion, casualty and the speed of light, relativistic dynamics.

### **Credits**

1

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH112 - GEN PHYSICS W/CALC II (3)
    - MA172 - CALCULUS II (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH113 - GEN PHYSICS W/CALC III (3)

## **PH301 - INTERMEDIATE MECHANICS**

### **Course Description**

Reviews Newtonian mechanics, natural and driven oscillations, variational calculus and Lagrange's equations, application to central force motion, rigid body rotation and coupled oscillators. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - PH305 - MATH METHODS IN PHYSICS (3)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)

## **PH305 - MATH METHODS IN PHYSICS**

### **Course Description**

Applied analytical techniques to solve problems in physics. Complex analysis, Fourier series, linear algebra, differential equations and vector calculus. Applications to mechanics, electricity and magnetism, optics, and thermodynamics. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH112 - GEN PHYSICS W/CALC II (3)

## **PH306 - APPLIED PHYSICS**

### **Course Description**

Computational and numerical techniques for problem solving. Applications to classical mechanics, electrodynamics, quantum mechanics, optics, and astrophysics. Offered Fall.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH305 - MATH METHODS IN PHYSICS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS121 - COMPUTER SCIENCE I (3)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)

## **PH310 - INTERMEDIATE LAB I**

### **Course Description**

Experiments in classical physics. Introduction to statistical methods. Offered Fall.

### **Credits**

2

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH116 - GENERAL PHYSICS LAB III (1)

## **PH311 - INTERMEDIATE LAB II**

### **Course Description**

Experiments in modern physics. Offered Spring.

### **Credits**

2

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH251 - SPECIAL RELATIVITY (1)
  - PH310 - INTERMEDIATE LAB I (2)

## **PH337 - ELECTRONICS**

### **Course Description**

Introductory course for all science students. Basic AC and DC circuits, operational amplifier circuits, transistor circuits, power supplies, digital logic and their use in laboratory instruments. Laboratory included. Offered Fall, odd years.

### **Credits**

4

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH112 - GEN PHYSICS W/CALC II (3)

## **PH351 - INTRODUCTION TO MODERN PHYSICS**

### **Course Description**

Kinetic theory, Blackbody radiation, Quantum physics: wave packets, the uncertainty principle, Schroedinger's equation and solutions for simple systems, application to atomic, nuclear, and solid-state physics. Offered Fall.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH113 - GEN PHYSICS W/CALC III (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH251 - SPECIAL RELATIVITY (1)

**PH416 - SENIOR LABORATORY****Course Description**

Advanced experimental techniques in various sub-fields of physics. Offered Fall, Spring.

**Credits**

2

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH311 - INTERMEDIATE LAB II (2)

**PH420 - SENIOR THESIS****Course Description**

Research performed under direction of a faculty member. Final research report required. Offered all terms.

**Credits**

3

**PH421 - THERMAL & STATISTICAL PHYSICS****Course Description**

States of model system, entropy and temperature, Boltzmann distribution, thermal radiation and Planck distribution, chemical potential and Gibbs distribution, ideal gas, Fermi and Bose gases, heat and work, semiconductor statistics, kinetic theory. Offered Spring, even years.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - PH301 - INTERMEDIATE MECHANICS (3)

**PH431 - INTERM ELECTRICI & MAGNETISM I****Long Course Title**

INTERMEDIATE ELECTRICITY & MAGNETISM I

**Course Description**

Electrostatics: electric fields, electric potential, Poisson's equation. Electric fields in matter. Magnetostatics: currents, magnetic fields. Magnetic fields in matter.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH305 - MATH METHODS IN PHYSICS (3)
    - MA201 - CALCULUS III (4)
  - Earned minimum grade of C- or concurrently enrolled in all of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)

**PH432 - INTERM ELECTRIC & MAGNETISM II****Long Course Title**

INTERMEDIATE ELECTRICITY & MAGNETISM II

**Course Description**

Continuation of PH 431. Maxwell's equations for time-varying fields, Electromagnetic waves, AC circuits, Radiation, and Relativistic electrodynamics. Offered Spring, odd years.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH431 - INTERM ELECTRICI & MAGNETISM I (3)

**PH451 - INTRO QUANTUM MECHANICS I****Long Course Title**

INTRODUCTION TO QUANTUM MECHANICS I

**Course Description**

Waves and particles: deBroglie waves, wave-packets, and the uncertainty principle. Postulates of quantum mechanics. Schrodinger's equation: simple systems in one, two and three dimensions, the hydrogen atom. Angular momentum and spin. Offered Fall.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PH305 - MATH METHODS IN PHYSICS (3)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)

**Cross-Listed Course**

PH551 - QUANTUM MECHANICS I

**PH452 - INTRO QUANTUM MECHANICS II****Long Course Title**

INTRODUCTION TO QUANTUM MECHANICS II

**Course Description**

Multiparticle systems, Atomic structure, Approximation methods, Scattering, Applications to nuclear, atomic, and molecular systems. Offered Spring.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH451 - INTRO QUANTUM MECHANICS I (3)

## **PH453 - INTRO TO PARTICLE PHYSICS**

### **Long Course Title**

INTRODUCTION TO PARTICLE PHYSICS

### **Course Description**

Surveys elementary particle physics, Standard Model of quarks, leptons, and gauge bosons. Lorentz transformations, four-vectors and relativistic kinematics, angular momentum and spin. Lifetimes, cross-sections, and Feynman rules. Quantum electro and chromo-dynamics, Dirac equation, renormalization.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - PH451 - INTRO QUANTUM MECHANICS I (3)

## **PH469 - RADIATION BIOLOGY**

### **Course Description**

This course will provide fundamental knowledge of the interaction and responses of the human body to ionizing radiation, and how to leverage it to manage cancer and to make objective decisions regarding the relative risks and benefits of radiation use in a variety of applications; and introduce basics practice in radiation oncology physics.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS313 - ANATOMY & PHYSIOLOGY I (4)
  - Earn a minimum grade of C- in all of the following:
    - PH113 - GEN PHYSICS W/CALC III (3)

### **Equivalent Course(s)**

BYS469 - RADIATION BIOLOGY

## **PH474 - INTRO TO GENERAL RELATIVITY**

### **Course Description**

Introduces general relativity and gravitational physics as inferred from the behavior of particles and light rays for a selection of spacetimes. Major properties of black holes, wormholes, gravitational waves. Physics First approach, and introduces new math as required for discussion of physics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH251 - SPECIAL RELATIVITY (1)
  - PH301 - INTERMEDIATE MECHANICS (3)



## **PH480 - SELECTED TOPICS**

### **Course Description**

Offered upon demand. Topics include physics, optics, astrophysics, and space physics. Offered all terms.

### **Credits**

1 - 3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH113 - GEN PHYSICS W/CALC III (3)
  - MA201 - CALCULUS III (4)

## **PH489 - SELECTED TOPICS**

### **Course Description**

Offered upon demand. Topics include physics, optics, astrophysics, astronomy, computational physics, and space physics. Offered all terms.

### **Credits**

1 - 3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH113 - GEN PHYSICS W/CALC III (3)
  - MA201 - CALCULUS III (4)

## **PH499 - PHYSICS PRACTICUM**

### **Course Description**

"Capstone" course designed to provide real-world research experience for graduating seniors. Students work individually with faculty members on projects. Requires oral presentation and final research report. Offered all terms. Required courses on the POS must be taken prior to, or concurrently with, this course.

### **Credits**

3

## **PH531 - INTRO TO PLASMA DYNAMICS**

### **Long Course Title**

INTRODUCTION TO PLASMA DYNAMICS

### **Course Description**

Single-particle motion in magnetic fields; fluid equations and fluid theory wave modes; MHD theory, stability, and wave modes; introduction to kinetic theory and hot plasma wave modes.

### **Credits**

3

## **PH541 - GEOMETRICAL OPTICS**

### **Course Description**

Foundations and physics of geometrical optics, Fermat's principles and Huygen wavelets, refraction and reflection. The many forms of Snell's Law. Optical path lengths, geometrical wavefronts and rays. Ray tracing, ynu-chart and matrix methods. Gaussian imagery and paraxial optics, conjugate elements, cardinal points, and image-object relations. Stops and pupils, chief and marginal rays, vignetting, and the optical or Lagrange invariant. The y-ybar diagram, design of common systems: objectives, magnifiers, microscopes, collimators and detectors. Optical glasses and chromatic aberrations, wavefront and transverse aberrations, spot diagrams and ray fan plots. (Same as OSE 541 and EE 541) Fall.

### **Credits**

3

### **Equivalent Course(s)**

EE541 - OPTICS I  
OSE541 - GEOMETRICAL OPTICS

## **PH542 - PHYSICAL OPTICS**

### **Course Description**

Scalar and electromagnetic waves, polarization, coherence, reflection and refraction; two beam and multiple beam interference, interferometers, Fabry-Perots, thin films, diffraction, and absorption and dispersion. (Same as OSE 542 and EE 542.) Fall, Spring.

### **Credits**

3

### **Equivalent Course(s)**

EE542 - PHYSICAL OPTICS  
OSE542 - PHYSICAL OPTICS

## **PH544 - OPTOELECTRONICS**

### **Course Description**

Review of polarized light, the Jones and Mueller calculi. Propagation of light in birefringent material. Modulation of light using electro-optic effect, Kerr effect, acousto-optic effect, and Faraday effect. Elements of photodetection and detectors, signal processing, and signal-to-noise. Design and analysis of beam scanners, optical rf-spectrum analyzer, optical sensors, and optical communication systems. (Same as OPT 444 and OPE 451.) Fall even years.

### **Credits**

3

## **PH546 - RADIOMETRY, DETECTORS & SOURCE**

### **Course Description**

Theory and practice of radiometry and photometry. Blackbody radiation and Lambertian sources. The propagation of radiant energy in free space and through optical systems. Detector classes, responsivity, bandwidth, and noise. Power spectral density, properties of sources, photon noise. (Same as OPT 446, OSE 546.) Spring even years.

### **Credits**

3

### **Equivalent Course(s)**

OPT446 - RADIOMETRY, DETECTORS, SOURCES  
OSE546 - RADIOMETRY, DETECTORS & SOURCE

## **PH551 - QUANTUM MECHANICS I**

### **Course Description**

Waves and particles; wave packets and the uncertainty principle; Schrodinger's equation and wave mechanics; postulates of quantum mechanics; simple systems in one, two and three dimensions; the hydrogen atom; angular momentum and spin; numerical solutions of the Schrodinger equation.

### **Credits**

3

### **Equivalent Course(s)**

CH553 - INTRO QUANTUM MECH I

MTS651 - INTRO QUANTUM MECH I

OSE555 - INTRO QUANTUM MECHANICS I

### **Cross-Listed Course**

PH451 - INTRO QUANTUM MECHANICS I

## **PH553 - INTRO TO PARTICLE PHYSICS**

### **Long Course Title**

INTRODUCTION TO PARTICLE PHYSICS

### **Course Description**

Survey of elementary particle physics with emphasis on the Standard Model of quarks, leptons and gauge bosons. Lorentz transformations, four-vectors and relativistic kinematics, angular momentum and spin. Lifetimes, cross-sections and Feynman rules. Quantum electro- and chromo-dynamics, Dirac equation and renormalization. Physics beyond the Standard Model.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in at least 1 of the following:
  - PH551 - QUANTUM MECHANICS I (3)
  - PH651 - QUANTUM MECHANICS I (3)

**PH560 - INTRO TO SOLID STATE PHYSICS I****Long Course Title**

INTRODUCTION TO SOLID STATE PHYSICS I

**Course Description**

Crystal binding and crystal structure. Crystal structure determination. Phonons and lattice vibrations. Free electron gas. Electronic energy band theory. (Same as MTS 660.) Fall, even years.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - 3 hours from:
    - PH551 - QUANTUM MECHANICS I (3)
    - CH553 - INTRO QUANTUM MECH I (3)
    - MTS651 - INTRO QUANTUM MECH I (3)
    - OSE555 - INTRO QUANTUM MECHANICS I (3)
  - Or Approval of Instructor

**Equivalent Course(s)**

MTS660 - INTRO SOLID ST PHY I

**PH561 - INTRO TO SOLID STATE PHYSIC II****Long Course Title**

INTRODUCTION TO SOLID STATE PHYSICS II

**Course Description**

Thermal properties of solids. Electronic properties, optical properties, electronic properties in a magnetic field, semiconductor devices, magnetism, superconductivity, defects and alloys, dislocations and crystal growth, non-crystalline solids, surfaces and interfaces. (Same as MTS 661.) Spring, odd years.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH560 - INTRO TO SOLID STATE PHYSICS I (3)

**Equivalent Course(s)**

MTS661 - INTRO SOLID ST PHY II

## **PH569 - RADIATION BIOLOGY**

### **Long Course Title**

RADIATION BIOLOGY

### **Course Description**

This course will provide fundamental knowledge of the interaction and responses of the human body to ionizing radiation, and how to leverage it to manage cancer and to make objective decisions regarding the relative risks and benefits of radiation use in a variety of applications; and introduce basic practice in radiation oncology physics.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of B in all of the following:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - PH100 - CONCEPTUAL PHYSICS (4)
  - Permission of Instructor

### **Restrictions**

Physics, Biology, Engineering

### **Equivalent Course(s)**

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### **Cross-Listed Course**

PH469 - RADIATION BIOLOGY

## **PH570 - OPT & PHOTONIC SYSTEMS DESIGN**

### **Long Course Title**

OPTICAL & PHOTONIC SYSTEMS DESIGN

### **Course Description**

Review of paraxial optics, ray tracing codes, aberration and diffraction calculations; acousto- and electro-optic modulators, spatial light modulators; fibers, fiber splicers and connectors; gratings and diffractive optical elements; laser and light emitting diodes, photodetectors and CCD arrays; correlator systems; optical communication networks; signal processing systems design. Fall, even years.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH541 - GEOMETRICAL OPTICS (3)

### **Equivalent Course(s)**

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OSE570 - OPT & PHOTONIC SYSTEMS DESIGN

## **PH571 - STELLAR ASTROPHYSICS**

### **Course Description**

Structure and physical processes of stars from the interior to the atmosphere: energy production and transfer, atmospheric properties, and observed spectral features. Models for stellar structure. Star formation and evolution, including the effects of a companion.

### **Credits**

3

### **Cross-Listed Course**

## **PH572 - GALAXIES & COSMOLOGY**

### **Course Description**

Galactic structure; Oort's constants; rotation curves; galaxy types; structure formation and evolution; Hubble expansion; Friedmann equation; cosmic microwave background; radiation and matter eras; primordial nucleosynthesis; dark matter/energy issues; development of structure in the early universe; horizon & flatness problems; inflation. Spring, odd years.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH571 - STELLAR ASTROPHYSICS (3)

## **PH574 - INTRO TO GENERAL RELATIVITY**

### **Long Course Title**

INTRODUCTION TO GENERAL RELATIVITY

### **Course Description**

An introductory course on general relativity and gravitational physics. General relativistic phenomena as inferred from the behavior of particles and light rays for a selection of spacetimes. Major properties of such objects as black holes, wormholes, gravitational waves, and the universe as a whole.

### **Credits**

3

## **PH579 - OBSERVATIONAL ASTROPHYSICS**

### **Course Description**

Astronomical coordinate systems and time; spherical astronomy; telescope designs; basic optics; CCDs; infrared arrays; observational calibration and noise; high resolution imaging techniques (e.g., adaptive optics); spectroscopy; and high and low energy observational techniques (e.g., X-ray telescopes, radio interferometry). Students will also conceive their own projects, write observing proposals, and convene as a Time Allocation Committee to review proposals and schedule telescope time. Students will acquire, reduce, analyze and interpret data from one of the allocated projects, and present the results in a short paper.

### **Credits**

3

## **PH589 - SELECTED TOPICS**

### **Credits**

3

## **PH601 - CLASSICAL DYNAMICS I**

### **Course Description**

Variational principles and Lagrangian mechanics, rigid body motion, Hamilton's equations, and theory of small oscillations. Aspects related to modern physics. Fall.

### **Credits**

3

## **PH607 - MATHEMATICAL METHODS I**

### **Course Description**

Review of vector calculus and coordinate systems, introduction to tensors, matrices, infinite series, complex variables with applications to calculus of residues, partial differential equations, and Sturm-Liouville theory. Orthogonal functions, gamma functions, Bessel functions, Legendre functions, special functions, Fourier series, integral transforms and equations. Fall.

### **Credits**

3

### **Equivalent Course(s)**

MA607 - MATHEMATICAL METHODS I

## **PH609 - MATHEMATICAL METHODS II**

### **Course Description**

Continuation of PH 607. Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH607 - MATHEMATICAL METHODS I (3)

### **Equivalent Course(s)**

MA609 - MATHEMATICAL METHODS II

## **PH615 - INTRO TO RADIOLOGICAL PHYSICS**

### **Long Course Title**

INTRODUCTION TO RADIOLOGICAL PHYSICS

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH551 - QUANTUM MECHANICS I (3)

## **PH616 - PHYSICS OF RADIATION THERAPY**

### **Course Description**

Operation of X-ray tubes, electron linear accelerators, cobalt-60 units, cyclotrons. Principles of accelerating waveguides, klystrons, magnetrons, electron scattering foils, flattening filters, monitor chambers, collimators. Percent-depth-dose (PDD), tissue-phantom-ratio (TPR), tissue-air-ratio (TAR), peak scatter factor (PSF). Equivalent squares, calculation of monitor units for specific dose rates, collimator scatter factor (Sc), phantom scatter factor (Sp). Principles of brachytherapy: calibration of sources, absorbed dose using AAPM TG-43 protocol. Calculation of isodose distributions: convolution/superposition, Monte Carlo calculations. Intensity modulated radiation therapy (IMRT), stereotactic radiosurgery, tomotherapy, total-body irradiation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH615 - INTRO TO RADIOLOGICAL PHYSICS (3)

## **PH621 - STAT MECH KINETIC THRY I**

### **Long Course Title**

STATISTICAL MECHANICS KINETIC THEORY I

### **Course Description**

Statistical methods, systems of particles, statistical thermodynamics, applications of thermodynamics, methods of statistical mechanics, applications of statistical mechanics, equilibrium between phases of chemical species. Summer.

### **Credits**

3

## **PH622 - STAT MECH KINETC THRY II**

### **Long Course Title**

STATISTICAL MECHANICS KINETIC THEORY II

### **Course Description**

Addresses the statistical description of collective processes in gases, plasmas, and fields based on the use of transport theory. The course provides the basis for the mathematical description of the basic kinetic and continuum models used in all fields of solar, space and astrophysics. Addresses specifically the transport of gases and Chapman-Enskog theory, magnetohydrodynamics in a collisional description, energetic particle transport in collisionless plasma, the transport of low-frequency turbulence, and if time permits, the transport of radiation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH621 - STAT MECH KINETIC THRY I (3)



## **PH631 - ELECTROMAGNETIC THEORY I**

### **Course Description**

Electrostatic and magnetostatic fields in vacuum and materials, Maxwell's equations, electromagnetic waves. Fall.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH607 - MATHEMATICAL METHODS I (3)

## **PH632 - FOURIER OPTICS**

### **Course Description**

Introducing the optical system as an invariant linear system, convolution, Sommerfield's diffraction integral, Fourier Transform, angular spectrum, coherent and incoherent imaging, optical transfer function.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH542 - PHYSICAL OPTICS (3)

### **Equivalent Course(s)**

EE632 - FOURIER OPTICS  
OSE632 - FOURIER OPTICS

## **PH636 - INTRO TO SPACE PLASMA PHYSICS**

### **Long Course Title**

INTRODUCTION TO SPACE PLASMA PHYSICS

### **Course Description**

Electromagnetic fields and particles in space; solar wind and solar energetic particles; currents and plasma waves in space; shocks and particle acceleration mechanisms; solar flares and coronal mass ejections. Spring, even years.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH531 - INTRO TO PLASMA DYNAMICS (3)

## **PH642 - OPTICAL PHYSICS**

### **Course Description**

Fundamental physics of optics and optical phenomena. Electromagnetic fields, sources and propagation. Coherence, interference, polarization, scattering, reflection, refraction, and diffraction. Optical properties of conductors and insulators. Introduction to quantum optics, lasers, and optical device physics. Offered Spring, even years.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH551 - QUANTUM MECHANICS I (3)

## **PH645 - LASERS I**

### **Course Description**

Incoherent light sources; atomic and molecular energy levels; equation of motion for probability amplitudes using first-order time dependent perturbation theory; electric dipole interaction. Einstein rate equations and the Planck radiation law; induced dipole moments and frequency dependent susceptibility. Homogeneous and inhomogeneous line broadening mechanisms; laser cavities and modes, elementary laser theory, practical lasers. (This course may be substituted for OSE 645.) Summer.

### **Credits**

3

### **Equivalent Course(s)**

OSE645 - LASERS

## **PH651 - QUANTUM MECHANICS I**

### **Course Description**

Free particle motion. Principles of wave mechanics. The Schrodinger equation and one-dimensional potentials. Approximation techniques: WKB, variational method, perturbation theory. Numerical methods.

### **Credits**

3

### **Prerequisites**

- Earned minimum grade of C- or concurrently enrolled in all of the following:
  - PH607 - MATHEMATICAL METHODS I (3)

## **PH652 - QUANTUM MECHANICS II**

### **Course Description**

Spherically-symmetric potentials, angular momentum, spin. Identical particles. Time-dependent perturbation theory. Scattering. Atomic structure.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH651 - QUANTUM MECHANICS I (3)
  - PH609 - MATHEMATICAL METHODS II (3)

## **PH654 - OPTICAL TESTING**

### **Course Description**

Spherometry; refractive index measurements; optical bench measurements of imaging systems via T-bar nodal slide (effective focal length, f-number, axial color, field curvature and distortion, transverse ray aberrations); illumination falloff; image resolution tests (finite object); modulation transfer function; star image testing; knife edge tests; Hartmann tests; Fizeau interferometer and testing configurations; null lens testing of aspheres; wavefront measurements (point diffraction interferometer, radial shear interferometer); (Same as OSE 654.) Spring.

### **Credits**

3

### **Equivalent Course(s)**

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OSE654 - OPTICAL TESTING

## **PH655 - APPLIED QUANTUM MECHANICS**

### **Course Description**

Application of quantum mechanics in solid state, electronics, materials science, and optics. Topics to include: Hydrogen atom and molecule, excitons, phonons, Bloch's theorem, periodic boundary conditions, electrons and holes, band structure of simple semiconductors, dipole transitions, optical constants, absorption and emission processes. Introduction to device physics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - PH651 - QUANTUM MECHANICS I (3)
  - OSE555 - INTRO QUANTUM MECHANICS I (3)

### **Equivalent Course(s)**

OSE655 - APPLIED QUANTUM MECHANICS

## **PH661 - DATA ANAL/STAT METH PH/ASTROPH**

### **Long Course Title**

DATA ANALYSIS & STATISTICAL METHODS FOR ASTROPHYSICS

### **Course Description**

Moments of a distribution, linear and non-parametric correlation, central limit theorem, error estimation, least squares modeling, estimating model parameters, Monte Carlo techniques. Bayes' theorem and likelihood methods. Energy and temporal spectral analyses. Power density spectra: periodic and quasi-periodic systems. Fall, even years.

### **Credits**

3

**PH670 - OPTOMECHANICAL DESIGN & MANUF****Long Course Title**

OPTOMECHANICAL DESIGN & MANUFACTURING

**Course Description**

Practical aspects of optomechanical design, material selection, fabrication and integration of precision optical components and systems for commercial, space, and military applications. Topics include: fixture design, tolerance analysis, machining methods, thermal stabilization, integrated computer-aided design and analysis, diamond machining, finishing and plating techniques. (Same as OSE 670.) Fall, even years.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - OSE541 - GEOMETRICAL OPTICS (3)

**Equivalent Course(s)**

OSE670 - OPT DESIGN & MANUFACTURING

**PH671 - OPTICAL FABRIC & TESTING****Long Course Title**

OPTICAL FABRICATION & TESTING

**Course Description**

Fabrication and testing techniques of optical components and systems. Component measurements: refractive index, curvature, focal lengths, cardinal points and field curvature. Wavefront aberration and transverse aberration function measurements: geometric tests, interferometric tests, null tests. Basics of grinding, figuring, polishing and optical coating. Laboratory experience in manufacturing, polishing, testing, and coating reflective or transmissive optics. Offered on demand.

**Credits**

3

**PH673 - HIGH ENERGY ASTROPHYSICS****Course Description**

Radiative Transfer: Blackbody, scattering and diffusion, bremsstrahlung, synchrotron emission, Compton scattering. Relativistic electromagnetism. Plasma effects and introduction to magnetohydrodynamics. Observational aspects of white dwarves, neutron stars and black holes. Accretion and astrophysical jets. Active galactic nuclei and gamma-ray bursts. Offered Fall of odd years.

**Credits**

3

**PH674 - GEN RELATIVITY & GRAVITATION I****Long Course Title**

GENERAL RELATIVITY & GRAVITATION I

**Course Description**

Special and general relativity; vector and tensor calculus; curved manifolds; elements of differential geometry; physics in curved spacetime; the Einstein equations; simple solutions of the Einstein equations; Schwarzschild geometry and the Kerr spacetime; black holes; sources, propagation, and detection of gravitational waves; a variational approach to general relativity; special topics.

**Credits**

3

**PH679 - EDUCATION CAPSTONE COURSE****Course Description**

Capstone experience for student pursuing secondary education certification option for MS degree. Student develops 1 credit, 100 level physics course on instructor-approved topic. Development includes syllabus, textbook evaluation, representative homework assignments, midterm, final, lecture outline, and lecture notes.

**Credits**

3

**PH689 - SELECTED TOPICS****Course Description**

Offered upon demand. Topics include: optical surface characterization, superconductivity, aeronomy, properties of solids, laser propagation, collision theory, magnetohydrodynamics. Fall, Spring, Summer.

**Credits**

1 - 3

**Equivalent Course(s)**

EE610 - SELECTED TOPICS/ECE

**PH699 - MASTER'S THESIS****Course Description**

Minimum of 6 credit hours required for Plan I M.S. students. Maximum of nine hours credit toward Ph.D. course requirements awarded upon successful completion of master's thesis. Fall, Spring, Summer.

**Credits**

3 - 6

**PH731 - ADVANCED PLASMA THEORY****Course Description**

Vlasov theory; electrostatic and electromagnetic waves in a hot plasma; wave damping processes; micro-instabilities; quasilinear theory; numerical simulation of plasmas; applications to space and astrophysics. Spring, odd years.

**Credits**

3

**PH732 - ELECTROMAGNETIC TH II****Long Course Title**

ELECTROMAGNETIC THEORY II

**Course Description**

Continuation of PH 631. Radiation from accelerated charges; Hamiltonian formulation of electrodynamics; covariant formulation of electrodynamics. Spring

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH631 - ELECTROMAGNETIC THEORY I (3)

**PH733 - QUANTUM DEVICES****Course Description**

Quantum aspects of optical, electronic, and semiconductor devices approached from a phenomenological/physical point of view. Topics will include: Quantum well devices, optical modulators, optical detectors, quantum Stark effects, electro-optic devices, high speed optical devices, frequency chirping in high speed devices and system applications. (Same as OSE 755.) Fall, odd years.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - PH551 - QUANTUM MECHANICS I (3)
  - PH651 - QUANTUM MECHANICS I (3)
  - OSE555 - INTRO QUANTUM MECHANICS I (3)

**Equivalent Course(s)**

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**PH742 - OPTICAL SCATTERING THEORY****Course Description**

Scattering and absorption of radiation by particles with spherical symmetry and arbitrary shapes described using Maxwell's equations, vector Helmholtz equations, the Jones and Mueller calculus, and numerical techniques.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - AES561 - ATMOSPHERIC RADIATION I (3)
  - EE609 - ELECTROMAGNETIC FIELD THEORY (3)
  - PH631 - ELECTROMAGNETIC THEORY I (3)

**PH745 - LASERS II**  
**Course Description**

The propagation of optical beams in homogeneous and lens-like media, optical resonators, interaction between radiation and atomic systems, laser oscillations and specific laser systems, switching and mode-locking of lasers, noise in laser amplifiers and oscillators, modulation of optical radiation. Fall, even years.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - PH645 - LASERS I (3)

**PH746 - NON-LINEAR OPTICS****Credits**

3

**PH751 - COMPUTATIONAL QUANTUM MECH****Long Course Title**

COMPUTATIONAL QUANTUM MECHANICS

**Course Description**

Numerical methods for solving the Schrodinger equation. Numerical approximation techniques: Rayleigh-Ritz theory. Quantum scattering from a spherically-symmetric potential. Multi-electron atoms: Hartree self-consistent field theory, Hartree-Fock theory, density functional theory. Electronic structure of diatomic molecules. Ab initio treatment of molecular structure. Additional extensive application to problems in molecular, atomic, and nuclear physics.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH652 - QUANTUM MECHANICS II (3)

**Equivalent Course(s)**

PH651 - QUANTUM MECHANICS I

**PH752 - QUANTUM MECHANICS II****Credits**

3

## **PH753 - QUANTUM FIELD THEORY**

### **Course Description**

Formalism of quantum field theory, construction and evaluation of Feynman diagrams for quantum electrodynamics and the weak interaction, first-order processes, renormalization, particle scattering and decay, nucleon structure, introduction to quantum chromodynamics, accelerator experiments, and astrophysical applications.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PH609 - MATHEMATICAL METHODS II (3)
  - PH652 - QUANTUM MECHANICS II (3)

### **Equivalent Course(s)**

PH751 - COMPUTATIONAL QUANTUM MECH

## **PH789 - SELECTED TOPICS**

### **Course Description**

Topics include superconductivity, advanced plasma theory, properties of solids, laser propagation, collision theory, quantum electronics, gravitational theories. Fall, Spring, Summer.

### **Credits**

1 - 3

## **PH792 - PHYSICS SEMINAR**

### **Course Description**

Students attend seminars by invited speakers. Two semesters are required for all M.S. students and three semesters for Ph.D. students. Does not count toward minimum degree requirements. Fall, Spring.

### **Credits**

1

## **PH795 - ADV PHYSICS PROJECT LAB**

### **Course Description**

Advanced laboratory research in one of the departmental research groups. Student works on an independent or group project. Completion of the course requires a written report that becomes part of the student's record. Fall, Spring, Summer.

### **Credits**

3 - 6

## **PH799 - DOCTORAL DISSERTATION**

### **Credits**

3 - 9



**PSC101 - INTRO TO AMERICAN GOVERNMENT****Long Course Title**

INTRODUCTION TO AMERICAN GOVERNMENT

**Course Description**

What motivates individuals and groups to act politically? This course introduces students to political structures, decision-making, and public policy in the U.S. The role of history in the development of current institutional structures and current political developments will be considered.

**Credits**

3

**Charger Foundations**

Area IV: Social & Behavioral Sciences

**PSC102 - INTRO TO COMPARATIVE POLITICS****Long Course Title**

INTRODUCTION TO COMPARATIVE POLITICS

**Course Description**

In this class we explore ways to compare countries and political systems. We study a wide variety of countries for a better understanding of political dynamics around the world. This includes countries at various stages of industrialization and democratization, in different regions of the globe.

**Credits**

3

**Charger Foundations**

Area IV: Social & Behavioral Sciences

**PSC103 - INTRO TO STATE & LOCAL GOVT****Long Course Title**

INTRODUCTION TO STATE & LOCAL GOVERNMENT

**Course Description**

Surveys the principles, forms, functions, and processes of state and local governments in the context of the American federal system, with specific emphasis on the political environment. Students will better understand the major functions of and the issues facing state and local governments.

**Credits**

3

**PSC220 - CRIT THINKING FOR INTEL ANALYS****Long Course Title**

CRITICAL THINKING FOR INTELLIGENCE ANALYSIS

**Course Description**

Examines critical reasoning strategies designed to correct cognitive biases and improve tradecraft skills in the context of intelligence analysis.

**Credits**

3

**Equivalent Course(s)**

PHL220 - CRIT THINKING FOR INTEL ANALYS

**PSC240 - COMPARATIVE POLITICAL SYSTEMS****Course Description**

Builds on introductions to comparative politics to further compare countries and their political systems. Examines the governments and politics of key case study countries, and analyzes recurring themes. Key theme/s will vary according to current events and research developments in the field of Comparative Politics.

**Credits**

3

**PSC260 - INTRO INTERNTL RELATIONS****Long Course Title**

INTRODUCTION TO INTERNATIONAL RELATIONS

**Course Description**

Examination of the basic factors underlying the conduct of international relations, focusing on conflict and changes taking place due to globalization. This course also seeks to stimulate intellectual curiosity, enhance critical thinking, and improve oral and writing skills.

**Credits**

3

**Charger Foundations**

Area IV: Social & Behavioral Sciences

**PSC300 - INTRO SOCIAL SCIENCE STATISTIC****Long Course Title**

INTRODUCTION TO SOCIAL SCIENCE STATISTICS

**Course Description**

This course covers basic statistical concepts, techniques, and the language of statistics; simple statistical modeling correlation and regression analysis; and nonlinear models and categorical models. Students will apply appropriate methods to analyze real world problems.

**Credits**

3

## **PSC302 - AMERICAN CONGRESS**

### **Course Description**

Studies the organization and role of the Congress, its leadership, internal processes, and relationships with other parts of the political system. The goal is to understand why Congress looks and acts the way it does, whose interests are represented, and how and why policies emerge as they do.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

## **PSC304 - AMERICAN PRESIDENCY**

### **Course Description**

Examination of the institution of the American presidency, its power, and the forces that shape it. Focus on developing students' ability to think conceptually and critically about the presidency, the president's role in the political system, and American politics in general.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

## **PSC309 - POLITICAL PARTIES & INT GROUPS**

### **Long Course Title**

INTRODUCTION TO SOCIAL SCIENCE STATISTICS

### **Course Description**

A survey of major linkages between citizens and government, this course studies the formation, organization, activities, and impacts of political parties and interest groups - and factors affecting them. Students will think critically about these institutions and their roles in the American system.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

## **PSC330 - CLASSI POLITI PHILOSOPHY**

### **Long Course Title**

CLASSICAL POLITICAL PHILOSOPHY

### **Course Description**

Careful analysis of the roots of political inquiry in selected works of ancient and medieval political philosophers. Major themes include the search for a just social order, the proper relationship between the citizen and the state, and other fundamental concepts of western political institutions.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in at least 1 of the following:
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PH101 - GENERAL PHYSICS I (4)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
  - Instructor Permission

### **Equivalent Course(s)**

PHL330 - CLASSI POLITI PHILOSOPHY

## **PSC332 - MODERN POLITICAL PHILOSO**

### **Long Course Title**

MODERN POLITICAL PHILOSOPHY

### **Course Description**

Critical examination of the philosophical foundations for modern politics that emerged from the 15th through the 19th century in western Europe. Major themes include the concepts of individual rights, property, representation, majority rule, limited government, and revolution.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in at least 1 of the following:
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
  - Instructor Permission

### **Equivalent Course(s)**

PHL332 - MODERN POLITICAL PHILOSO

**PSC334 - AMER POLITICAL THOUGHT****Long Course Title**

AMERICAN POLITICAL THOUGHT

**Course Description**

In-depth study of theorists, concepts and forces that have shaped American political values from the founding of the republic to the present. Major themes include the relationship between liberty and equality, rights and democracy, and industrialization and the public good.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**PSC399 - CURRENT AFFAIRS****Course Description**

An examination of current national and international issues. Focus is on developing critical reading, listening, and writing skills. The course may be repeated up to three times.

**Credits**

1

**PSC412 - PUBLIC ADMINISTRATION****Course Description**

Examination of public agencies and their relationships with legislative and elected executive officials. National, state, and local case studies are utilized to illustrate administrative problems including leadership, decision making, communications, and staff-line conflict.

**Credits**

3

**PSC420 - FEDERALISM & INTERGOV RELATION****Long Course Title**

FEDERALISM & INTERGOVERNMENTAL RELATIONS

**Course Description**

Designed to help students navigate complex relationships among the 90,000+ governments in the U.S., this course examines the framework of federalism and the tools available to governments to influence public policy outcomes. Students will investigate the impacts of these relationships on policy.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Cross-Listed Course**

PSC520 - FEDERALISM & INTERGOV RELATION

## **PSC436 - POLITICAL IDEOLOGIES**

### **Course Description**

Critical examination of the philosophical foundations and political ethics of contemporary political ideologies. Among the major ideologies studied will be relevant examples of conservatism, liberalism, Marxism, Nazism, and religion, such as liberation theology and Islamism.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

## **PSC438 - CONTEMPORARY POLITICAL THOUGHT**

### **Course Description**

Systematic study of recent and current thinking on issues and problems of politics, social theory, and ethics with special attention to the philosophical dimension of these issues and problems.

### **Credits**

3

### **Equivalent Course(s)**

PHL438 - CONTEMPORARY POLITICAL THOUGHT

## **PSC440 - REGIONAL STUDIES**

### **Course Description**

This class compares and examines the politics of Asia, Latin America, the Middle East, or Africa, depending on the term. We focus on select countries of themes within each region as part of our study of political structures, history, and culture, for a deeper understanding of each area.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
  - PSC102 - INTRO TO COMPARATIVE POLITICS (3)

### **Cross-Listed Course**

PSC540 - REGIONAL STUDIES

## **PSC451 - LAW, COURTS, & PUBLIC POLICY**

### **Course Description**

Examines the role of the courts in the making of public policy in the United States, with an emphasis on the use of the courts by interest groups seeking to achieve specific policy goals.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

### **Cross-Listed Course**

PSC551 - LAW, COURTS & PUBLIC POLICY

## **PSC452 - AMER CONSTITUTIONAL LAW**

### **Long Course Title**

AMERICAN CONSTITUTIONAL LAW

### **Course Description**

Examination of the structure of the federal government and its powers through an analysis of leading cases from the Supreme Court. Topics include federalism, separation of powers, and the proper role and decision-making process of the Supreme Court.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

## **PSC454 - CIVIL LIBERTIES**

### **Course Description**

Examines the relationship between the government and individuals in American society through an analysis of Supreme Court cases. The focus is on contemporary questions about the rights of individuals and appropriate limits to freedom of action set by government.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**PSC461 - ECONOMIC DEVELOPMENT****Long Course Title**

ECONOMIC DEVELOPMENT IN THE GLOBAL SOUTH

**Course Description**

Understand economic development in the developing world. Examine economic transformation & social justice. Highlight domestic and international institutional, structural, & political sources of economic dynamism/lack thereof in the Global South.

**Credits**

3

**Prerequisites**

- Must have a class standing of Junior or higher

**Cross-Listed Course**

PSC561 - ECONOMIC DEVELOPMENT

**PSC462 - INTEL, SEC, & DECISION MAKING****Long Course Title**

INTELLIGENCE, SECURITY, & DECISION-MAKING

**Course Description**

An examination of the history, culture, policies, and structures shaping the development of U.S. foreign and national security policies. Special attention will be placed on the roles of Congress, National Security Council, Defense Department, State Department, and the intelligence community.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Cross-Listed Course**

PSC562 - INTEL, SEC, & DECISION MAKING

**PSC464 - AMERICAN FOREIGN POLICY****Course Description**

An examination of the substance of contemporary U.S. foreign policies and the goals the country seeks to achieve around the world. Students will attempt to evaluate the effectiveness of those policies and examine why it is often difficult for the country to achieve its goals.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Cross-Listed Course**

PSC564 - AMERICAN FOREIGN POLICY



**PSC466 - NATL SECURITY STRATEGY & PLCY****Long Course Title**

NATIONAL SECURITY STRATEGY & POLICY

**Course Description**

An examination of current U.S. national security strategy and policy. The course will review current strategy and policy documents, examine specific responses to the variety of threats facing the United States, and evaluate whether those policies are effective at achieving their goals.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Cross-Listed Course**

PSC566 - NATIONAL SECURITY STRGY & PLY

**PSC470 - ISSUES IN SECURITY POLICY****Course Description**

Examination of select security-related policy issues. The content of this course will vary during different terms, and students may take the course multiple times so long as the content differs.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

**Cross-Listed Course**

PSC570 - ISSUES IN SECURITY POLICY

**PSC480 - ADV TOPICS POLITICAL SCIENCE****Long Course Title**

ADVANCED TOPICS IN POLITICAL SCIENCE

**Course Description**

Select topics in local, state, national and world politics. This course may be repeated for credit as long as content of the course has changed.

**Credits**

3

**Cross-Listed Course**

PSC580 - SPECIAL TOPICS IN POLITICAL SC

## **PSC484 - SENIOR SEMINAR**

### **Course Description**

This class engages students in an advanced examination of the subfields of political science that are offered by the department. The course may be repeated with different faculty for up to 6 hours of credit.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Earn a minimum grade of D- in all of the following:
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)

## **PSC495 - INTERNSHIP IN GOVERNMENT**

### **Course Description**

Students may receive academic credit for an internship with a local, state, or federal governmental agency, or with political, legal, or public policy related organizations.

### **Credits**

1 - 6

### **Prerequisites**

- Instructor Permission Required

## **PSC498 - DIRECTED READINGS & RESEARCH**

### **Course Description**

Supervised in-depth readings and/or individual research in an area of specialized interest to both student and instructor.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:
    - Must earn minimum grade of D- in any selected course
    - Courses from -
  - Instructor Permission Required

## **PSC500 - THE AMERICAN POLITY**

### **Course Description**

A comprehensive and intensive view of the foundations, institutions, and dynamics of the American polity and the relationship of these forces to the making of public policy.

### **Credits**

3

**PSC501 - THE PUBLIC POLICY PROCESS****Course Description**

Provides an analytical framework for critical thinking about public policy processes in American governments. Examines policymaking processes. Discusses political, economic, social, and institutional factors that influence policymaking processes and the impacts of policy decisions by national, state, and local levels of government.

**Credits**

3

**PSC510 - PUBLIC MGMT PROFESSION****Long Course Title**

PUBLIC MANAGEMENT PROFESSION

**Course Description**

Introduction to public management as a field of study and practice. Review of basic literature. Emphasis on ethics in public service.

**Credits**

3

**PSC520 - FEDERALISM & INTERGOV RELATION****Long Course Title**

FEDERALISM & INTERGOVERNMENTAL RELATIONS

**Course Description**

Designed to help students navigate complex relationships among the 90,000+ governments in the U.S., this course examines the framework of federalism and the tools available to governments to influence public policy outcomes. Students will investigate the impacts of these relationships on policy.

**Credits**

3

**Equivalent Course(s)****Cross-Listed Course**

PSC420 - FEDERALISM & INTERGOV RELATION

**PSC540 - REGIONAL STUDIES****Course Description**

An examination of the politics of Asia, Latin America, the Middle East, or Africa, depending on the term. We focus on select countries or themes within each region as part of our study of political structures, history, and culture, for a deeper understanding of each area.

**Credits**

3

**Cross-Listed Course**

PSC440 - REGIONAL STUDIES

**PSC551 - LAW, COURTS & PUBLIC POLICY****Course Description**

Examines the role of the courts in the making of public policy in the United States, with an emphasis on the use of the courts by interest groups seeking to achieve specific policy goals.

**Credits**

3

**Cross-Listed Course**

PSC451 - LAW, COURTS, & PUBLIC POLICY

**PSC561 - ECONOMIC DEVELOPMENT****Long Course Title**

ECONOMIC DEVELOPMENT IN THE GLOBAL SOUTH

**Course Description**

Understand economic development in the developing world. Examine economic transformation & social change towards addressing poverty, inequality, & social justice. Highlight domestic & international institutional, structural, & political sources of economic dynamism/lack thereof in the Global South.

**Credits**

3

**Cross-Listed Course**

PSC461 - ECONOMIC DEVELOPMENT

**PSC562 - INTEL, SEC, & DECISION MAKING****Long Course Title**

INTELLIGENCE, SECURITY, & DECISION-MAKING

**Course Description**

An examination of the history, culture, policies, and structures shaping the development of U.S. foreign and national security policies. Special attention will be placed on the roles of Congress, the National Security Council, Defense Department, State Department, and the intelligence community.

**Credits**

3

**Cross-Listed Course**

PSC462 - INTEL, SEC, & DECISION MAKING

**PSC564 - AMERICAN FOREIGN POLICY****Course Description**

An examination of the substance of the contemporary U.S. foreign policies and the goals the country seeks to achieve around the world. Students will attempt to evaluate the effectiveness of those policies and examine why it is often difficult for the country to achieve its goals.

**Credits**

3

**Cross-Listed Course**

PSC464 - AMERICAN FOREIGN POLICY

**PSC566 - NATIONAL SECURITY STRGY & POLY****Long Course Title**

NATIONAL SECURITY STRATEGY & POLICY

**Course Description**

An examination of current U.S. national security strategy and policy. The course will review current strategy and policy documents, examine specific responses to the variety of threats facing the United States, and evaluate whether those policies are effective at achieving their goals.

**Credits**

3

**Cross-Listed Course**

PSC466 - NATL SECURITY STRATEGY & POLY

**PSC570 - ISSUES IN SECURITY POLICY****Course Description**

Examination of select security-related policy issues. The content of this course will vary during different terms, and students may take the course multiple times so long as the content differs.

**Credits**

3

**Equivalent Course(s)****Cross-Listed Course**

PSC470 - ISSUES IN SECURITY POLICY

**PSC580 - SPECIAL TOPICS IN POLITICAL SC****Long Course Title**

SPECIAL TOPICS IN POLITICAL SCIENCE

**Course Description**

Selected topics in local, state, national and world politics. This course may be repeated for credit as long as content of course has changed.

**Credits**

1 - 3

**Cross-Listed Course**

PSC480 - ADV TOPICS POLITICAL SCIENCE

**PSC600 - THE AMERICAN POLITY****Course Description**

Comprehensive and intensive review of the philosophical foundations; formal institutions; and social, economic, and political dynamics of the American polity, with particular emphasis on their relationship to the making of public policy.

**Credits**

3

**PSC601 - THE PUBLIC POLICY PROCESS****Course Description**

This course offers an analytical framework for critical thinking about public policy in the U.S.- the inputs, processes, and outputs of governmental activity. Also considers factors that influence policy processes, as well as impacts of decisions by different governments and actors.

**Credits**

3

**PSC610 - PUBLIC MANAGEMENT PROFESSIONS****Course Description**

Introduction to public management as a field of study and practice. Review of basic literature. Emphasis on ethics in public service.

**Credits**

3

**PSC611 - PUBLIC PERSONNEL ADMINIS****Long Course Title**

PUBLIC PERSONNEL ADMINISTRATION

**Course Description**

Purposes, functions, and processes of personnel management at the national, state, and local levels.

**Credits**

3

**PSC612 - BUDGETARY PROCESS****Course Description**

Governmental revenue and expenditure policies. Budget as a method of administrative and fiscal control.

**Credits**

3

**PSC615 - SPEC TOPICS IN PUBLIC AFFAIRS****Long Course Title**

SPECIAL TOPICS IN PUBLIC AFFAIRS

**Course Description**

Special and advanced topics in public affairs and public policy. Students must have completed 12 hours in the Public Affairs and Policy program. Instructor permission required. This course may be repeated for credit as long as content of this course has changed.

**Credits**

3

**PSC630 - PUBL VALUES/PUBL POLICY****Long Course Title**

PUBLIC VALUES & PUBLIC POLICY

**Course Description**

Critical examination of the value assumptions of social theoretical paradigms that influence the formation, implementation, and evaluation of public policies. Major themes include ideological biases, ethics of social policies, and moral problems of economic distribution and redistribution.

**Credits**

3

**PSC635 - PROGRAM EVALUATION AND METHODS****Long Course Title**

PROGRAM EVALUATION & METHODS

**Course Description**

This course focuses on program evaluation and methods of social science research. By learning the logic and practice of research design and methods, students will be equipped with the necessary skills and techniques to critically evaluate public policy programs and to design and execute research projects.

**Credits**

3

**PSC690 - CAPSTONE****Course Description**

Capstone projects give students the opportunity to integrate classroom learning with relevant problem solving they might face in a professional work situation. Students will conduct independent research on a policy question and formulate recommendations based on their findings.

**Credits**

3

**PSC695 - INTERNSHIP IN GOVERNMENT****Course Description**

Students may receive academic credit for an internship with a local, state, or federal governmental agency, or with a political, legal, or public policy related organization. Students must have completed 12 hours in the Public Affairs program.

**Credits**

1 - 6

**PSC698 - DIRECTED READINGS & RESEARCH****Course Description**

Supervised in-depth readings and/or individual research in an area of specialized interest to both student and instructor.

**Credits**

3

## **PSC699 - MASTER'S THESIS**

### **Course Description**

Required every semester a student is writing and receiving direction on a master's thesis. A minimum of two terms and six thesis hours is required for the thesis option. No more than six hours credit may be applied toward the degree.

### **Credits**

1 - 3

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## **Professional Studies**

### **PRO101 - INTRO COLLEGE ACADEMY**

#### **Course Description**

Focus is on learning theory, discovering learning style preferences and appropriate, effective study methods, understanding the issues facing college students today and strategies to overcome them, learning about available campus academic and student support resources and how to utilize them improving oral and written communication skills. Identifying UAH academic organizations and recognizing the importance of involvement and developing the skills. Must be part of College Academy. May not be used for Charger Foundations.

#### **Credits**

3

#### **Charger Foundations**

INTRODUCTION TO COLLEGE ACADEMY

### **PRO301 - FOUNDATIONS ADULT LEARNING**

#### **Course Description**

This course employs foundational learning theories and related research in adult education and development to help students successfully transition to UAH. Students will define competencies needed for success in academic study and professional leadership, in setting educational goals, and in planning a learning experience to achieve them. Emphasis is placed on issues unique to adult re-entry students and the university services available to support nontraditional students.

#### **Credits**

1

### **PRO320 - INDS PERSPECT & CRITICAL THNKG**

#### **Long Course Title**

INTERDISCIPLINARY PERSPECTIVES & CRITICAL THINKING

#### **Course Description**

Interdisciplinary studies fosters foundational knowledge acquisition by which individuals draw on multiple disciplinary perspectives and integrate their insights and modes of thinking to advance the studies and the fundamental development of critical and analytical thinking skills. Complex issues are addressed from multi-faceted perspectives that stimulate problem solving, problem defining and problem posing. Emphasis is placed on how to synthesize evidence drawn from multiple sources as a basis for informed decision-making.

#### **Credits**

3

#### **Prerequisites**

- Admitted to: BA PRO STUD



**PRO321 - MEDIA LITERACY****Long Course Title**

MEDIA LITERACY FOR INTERDISCIPLINARY STUDIES

**Course Description**

Investigate the interdisciplinary nature of 21st-century media. Students analyze the combined influence of production methods, semiotics, politics, ethics, and psychology on our critical understanding of advertising, propaganda, conspiracy theories, social media, and the Internet of Things.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EH102 - COLLEGE WRITING II (3)
  - Must have a class standing of Sophomore or higher

**PRO398 - SPEC TOPICS: INTERDISC STUDIES****Course Description**

Course uses an interdisciplinary approach to draw on intersecting and divergent knowledge from a variety of scholarly disciplines in order to create an in-depth and multi-faceted understanding of a particular instructor chosen issue, topic or problem.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - EH102 - COLLEGE WRITING II (3)

**PRO399 - INDEP STUDY: INTERDISC STUDIES****Course Description**

Course allows individual students to pursue an interdisciplinary topic of interest which is not otherwise available and may involve any combination of readings assignments, tutorials, lectures, papers, presentations, or field/laboratory study (determined in consultation with instructor).

**Credits**

3

**Prerequisites**

- Admitted to: BA PRO STUD

**PRO498 - INTERDISC RES METHODS & APPS****Long Course Title**

INTERDISCIPLINARY RESEARCH METHODS & APPLICATIONS

**Course Description**

This course introduces students to interdisciplinary research methods. In the course, students will apply their knowledge - identifying an interdisciplinary problem related to their approved concentration area, performing the foundational research, and formulating a research proposal for their Capstone research thesis/project.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PRO320 - INDS PERSPECT & CRITICAL THNKG (3)

**PRO499 - CAPSTONE EXP: RSCH THESIS/PROJ****Long Course Title**

CAPSTONE EXPERIENCE: RESEARCH THESIS/PROJECT

**Course Description**

Students majoring in Professional Studies are required to complete a senior research thesis in their approved interdisciplinary concentration. This Capstone course requires the student to demonstrate his/her ability to integrate the core knowledge and skills gained in their interdisciplinary areas of study using inquiry-based learning methods. Research is conducted and a thesis-style paper is written and orally presented.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PRO498 - INTERDISC RES METHODS & APPS (3)

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## Psychology

**PY101 - GENERAL PSYCHOLOGY I****Course Description**

Introduction to methods and research findings in the field. Topics include learning, memory, cognition, human development, personality theories, and abnormal behavior. Credit for PY 101 may be obtained by either Advanced Placement (AP) or the College Level Examination Program (CLEP).

**Credits**

3

**Charger Foundations**

Area IV: Social & Behavioral Sciences

## **PY102 - APPLICATIONS IN PSYCHOLOGY**

### **Course Description**

Introduction to applied topics in psychology, such as statistical analysis, counseling, human factors, health psychology, and industrial and organizational psychology. Career opportunities are discussed. Students are required to engage in approved experiential activities such as participating in current research studies and attending lectures.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)

## **PY201 - LIFE-SPAN DEVELOPMENT**

### **Course Description**

Examination of the psychological, social, and physical factors that affect human behavior and development from conception to death.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)

### **Charger Foundations**

Area IV: Social & Behavioral Sciences

## **PY300 - PSYCHOLOGICAL STATISTICS**

### **Course Description**

Introduction to psychological statistics, with an emphasis on quantitative analysis of experimental data. Topics covered include probability, descriptive statistics, and hypothesis testing.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA105 - NATURE OF MATHEMATICS (3)
  - MA107 - ALGEBRA WITH APPLICATIONS (3)
  - MA110 - FINITE MATHEMATICS (3)
  - MA112 - PRECALCULUS ALGEBRA (3)
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - MA171 - CALCULUS I (4)
  - MA171S - CALCULUS I S-SECTION (4)
  - MA181 - INTRODUCTION TO STATISTICS (3)
  - MA106 - COLLEGE ALGEBRA (3)

### **Corequisites**

- Concurrently enrolled in:
  - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)

## **PY301 - PERSONALITY**

### **Course Description**

Examinations of various theories of personality with possible implications for research.

### **Credits**

3

## **PY302 - RESEARCH METHODS FOR PSYCH**

### **Course Description**

Design and execution of experiments in psychology. Data analysis and manuscript preparation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)

**PY303 - PY RESEARCH METHODS****Long Course Title**

PSYCHOLOGY RESEARCH METHODS

**Course Description**

Students will learn the fundamentals of psychological research - how to form research questions and hypotheses, select an appropriate design to ethically address specific research questions, and how to critically evaluate research and findings. Student will also be taught about creating surveys, interviewing and observing participants.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)

**PY304 - PSYCHOLOGICAL STATISTICS LAB****Course Description**

This course is an introduction to analyzing data with computerized statistical software. This course will provide students with a familiarity of SPSS, and the abilities to analyze experimental data, read computer statistical output and write-up statistical results.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - PY300 - PSYCHOLOGICAL STATISTICS (3)

**PY305 - PY RESEARCH METHODS LAB****Long Course Title**

PSYCHOLOGY RESEARCH METHODS LAB

**Course Description**

Lab associated with PY 303. Covers the design and execution of quantitative and qualitative research designs, data analysis, and manuscript preparation.

**Credits**

1

**Corequisites**

- Concurrently enrolled in:
  - PY303 - PY RESEARCH METHODS (3)

## **PY306 - PY SCIENCES METHODS LAB**

### **Course Description**

Lab component of PY 302.

### **Credits**

1

### **Corequisites**

- Concurrently enrolled in:
  - PY302 - RESEARCH METHODS FOR PSYCH (3)

## **PY316 - PERCEPTION**

### **Course Description**

Examines sensory systems and elements of perception. Topics include vision research, audition, chemical senses, and body sensations.

### **Credits**

3

## **PY317 - PHILOSOPHY OF MIND**

### **Course Description**

The problem of the nature of mind and its relationship to the physical world has been a perennial concern of philosophy. This course examines, theories, and arguments concerning the nature of mind.

### **Credits**

3

## **PY324 - WORK DESIGN**

### **Course Description**

Introduces the portion of the design process that uses basic principles of methods analysis and ergonomics to fit a task to the human operator. Methods analysis topics include: work measurement, job analysis, and job evaluation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - ISE390 - PROB & ENGR STATISTICS I (3)

### **Equivalent Course(s)**

ISE324 - WORK DESIGN

## **PY330 - NONVERBAL COMMUNICATION**

### **Course Description**

Examines the diversity of specific human nonverbal behavior such as eye contact, touch, time, appearance, and distance and how these behaviors influence everyday communication experiences. Drawing on theory, students explore the practical ways verbal and nonverbal communication intersect in everyday interactions to create shared meaning. Same as CM 330.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)

### **Equivalent Course(s)**

CM330 - NONVERBAL COMMUNICATION

## **PY333 - PY OF ADJUSTMENT & ADAPTATION**

### **Long Course Title**

PSYCHOLOGY OF ADJUSTMENT & ADAPTATION

### **Course Description**

PY 333 will explore psychological approaches to understanding, managing, and modifying our physical and emotional well-being. Students will learn ways to apply psychological principles and concepts to enhance coping with various issues of adulthood. Relationships with others, the environment and the self will be examined.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)

## **PY375 - SOCIAL PSYCHOLOGY**

### **Course Description**

Examination of the social influences on both individual and group behavior. Topics may include attitudes, group processes, intergroup conflict, interpersonal attraction, aggression, altruism, and impression formation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)
  - SOC100 - INTRO TO SOCIOLOGY (3)

### **Equivalent Course(s)**

SOC375 - SOCIAL PSYCHOLOGY

## **PY400 - INTRO TO CLINICAL & COUNSELING**

### **Long Course Title**

INTRODUCTION TO CLINICAL & COUNSELING

### **Course Description**

PY 400 introduces clinical/counseling psychology and professional psychology. History of diagnosis and treatment, theoretical models in counseling, contemporary practice models, research basis of clinical/counseling psychology, empirically validated therapies, and doctoral program models are covered.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - PY101 - GENERAL PSYCHOLOGY I (3)
  - Must have a class standing of Sophomore or higher

### **Cross-Listed Course**

PY500 - INTRO CLINICAL & COUNSELING

## **PY402 - INDUSTRIAL & ORGANIZA PSY**

### **Long Course Title**

INDUSTRIAL & ORGANIZATIONAL PSYCHOLOGY

### **Course Description**

Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:
    - Must earn minimum grade of D- in any selected course
    - Courses from PY -
  - Must have a class standing of Junior or higher

### **Equivalent Course(s)**

ISE402 - INDUSTRIAL & ORGANIZA PSY

### **Cross-Listed Course**

PY502 - INDUSTRIAL & ORGANIZA PSY



## **PY403 - HUMAN FACTORS PSYCHOLOGY**

### **Course Description**

Human performance in human-technology-environment systems. Includes consideration of human capabilities and limitations as related to controls and displays. Open to students who have completed 15 hours of psychology.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
  - Must have a class standing of Junior or higher

### **Equivalent Course(s)**

ISE403 - HUMAN FACTORS PSYCHOLOGY

### **Cross-Listed Course**

PY503 - HUMAN FACTORS PSYCHOLOGY

## **PY404 - THEORIES OF COUNSELING**

### **Course Description**

This course is designed to introduce theories of psychotherapy and the process of psychotherapy and counseling. This course is a survey of counseling/psychotherapy models and techniques with emphasis on Empirically Validated Therapies (EVT) and traditional models with substantial support in the research and clinical literature.

### **Credits**

3

### **Cross-Listed Course**

PY504 - THEORIES OF COUNSELING

## **PY405 - PSYCHOPHARMACOLOGY**

### **Course Description**

Introduction to drug classification and action with emphasis on physiological psychological interactions. Open to students who have completed 15 hours of psychology.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
  - Must have a class standing of Junior or higher
  - Admitted to: BA PY

### **Equivalent Course(s)**

BYS405 - PSYCHOPHARMACOLOGY

## **PY406 - PSYCHOLOGY OF WOMEN**

### **Course Description**

Examines theory and research in the psychological functioning of women, both in the United States and other nations. Topics include achievement and education, mental and physical health issues, and victimization of women.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
  - Must have a class standing of Senior

### **Cross-Listed Course**

PY506 - PSYCHOLOGY OF WOMEN

## **PY407 - CROSS-CULTURAL PSYCHOLOGY**

### **Course Description**

Examines psychological similarities and differences between members of industrialized and non-industrialized cultures. Comparisons will include development, social interaction, and perception.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
  - Must have a class standing of Senior

### **Cross-Listed Course**

PY507 - CROSS-CULTURAL PSYCHOLOGY

## **PY408 - TEAMWORK & TEAM PROCESSES**

### **Course Description**

This course provides an introduction to teams and teamwork processes. The foundation of the course is research-based; topics will be approached from the context of empirical research. The types of research designs that are typically used in team research are addressed.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Junior or higher

### **Cross-Listed Course**

PY508 - TEAMWORK & TEAM PROCESSES

## **PY409 - PSYCHOLOGY OF AGING**

### **Course Description**

PY 409 examines psychological processes in adulthood and aging. Emphasis is placed on contemporary theories, methodological issues, and how psychological, biological, social, and environmental factors interact to predict growth, maintenance, or decline in abilities throughout adulthood and aging.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)

### **Cross-Listed Course**

PY509 - PSYCHOLOGY OF AGING

## **PY410 - TASK ANALYSIS & PROTOTYPING**

### **Long Course Title**

TASK ANALYSIS & PROTOTYPING

### **Course Description**

This course introduces students to methods for analyzing user actions as they interact with software and tools to complete tasks. Students apply a range of prototype techniques from fast, low-fidelity prototypes to interactive high-fidelity prototypes.

### **Credits**

3

### **Prerequisites**

- Must have a class standing of Junior or higher

### **Cross-Listed Course**

PY510 - TASK ANALYSIS & PROTOTYPING

## **PY414 - HUMAN RESEARCH:LEARNING**

### **Course Description**

Analysis of learning principles from simple relationships with animals to the complexities of human language and problem solving.

### **Credits**

3

### **Cross-Listed Course**

PY514 - ADVANCED LEARNING

## **PY415 - DEVELOPMENTAL PSYCHOLOGY**

### **Course Description**

Examination of cognitive, psychoanalytic, ethological, behavioral, and humanistic theories of development.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in all of the following:
    - PY101 - GENERAL PSYCHOLOGY I (3)
  - Instructor Permission

### **Cross-Listed Course**

PY515 - ADV. DEVELOPMENTAL PSYCHOLOGY

## **PY420 - SPECIAL TOPICS**

### **Course Description**

Pre-announced special areas in seminar discussion, laboratory work, or practicum. May be taken twice for credit.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
  - Must have a class standing of Junior or higher

### **Cross-Listed Course**

PY520 - SPECIAL TOPICS

## **PY422 - INDIVIDUAL RESEARCH**

### **Course Description**

With advice of instructor, design and execution of original experiment in psychology. May be taken twice for credit. Open to students who have completed 15 hours of psychology.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
  - Must have a class standing of Junior or higher

## **PY430 - PSYCHOMETRICS**

### **Course Description**

History and development of psychological testing with special emphasis given to both theory and process of effective evaluation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY300 - PSYCHOLOGICAL STATISTICS (3)

### **Cross-Listed Course**

PY530 - PSYCHOMETRICS

## **PY434 - PSYCHOLOGY AND LAW**

### **Course Description**

This seminar is a survey of the major topics represented in the field of Psychology and Law. We will focus on how psychological research can contribute to a better understanding of issues related to law.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - PY302 - RESEARCH METHODS FOR PSYCH (3)
  - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -

### **Cross-Listed Course**

PY534 - PSYCHOLOGY AND LAW

## **PY435 - PSYCHOPATHOLOGY**

### **Course Description**

Survey of major psychological approaches to conceptualizing abnormal behavior, with discussion of present diagnostic categories of psychological disorders. Open to students who have completed 15 hours of psychology.

### **Credits**

3

### **Prerequisites**

- Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -

## **PY436 - BIOLOGICAL PSYCHOLOGY**

### **Course Description**

Neural and endocrinological systems underlying behavior.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Complete 1 of the following
    - Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -
    - Instructor Approval
  - Complete all of the following
    - Earn a minimum grade of D- in all of the following:
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
    - Earned at least 6 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -

### **Equivalent Course(s)**

BYS436 - BIOLOGICAL PSYCHOLOGY

## **PY437 - PSYCHOBIOLOGY STRESS & ILLNESS**

### **Course Description**

Overview of physiological stress responses and their influence on health behavior and illness.

### **Credits**

3

### **Prerequisites**

- Earned at least 15 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from PY -

### **Cross-Listed Course**

PY537 - PSYCHOBIOLOGY STRESS & ILLNESS

## **PY480 - COGNITION**

### **Course Description**

Information processing: how information is acquired, encoded, organized, stored, and retrieved. This process will be applied to specific areas of psychology such as language, learning, or personality.

### **Credits**

3

### **Cross-Listed Course**

PY580 - PROSEMINAR: COGNITIVE

**PY488 - PY SERVICES INTERNSHIP****Long Course Title**

PSYCHOLOGY SERVICES INTERNSHIP

**Course Description**

This course provides a supervised experience in a professional environment for students to apply their psychological skills to projects outside the classroom, facilitate their entry into the job market in psychological services after graduation, and enhance their pre-professional experience.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earned at least 18 hours from:  
Courses from PY -
  - Must have a class standing of Junior or higher
  - Earned a minimum major GPA of 2.500
  - Department Chair Approval

**PY490 - READINGS IN PSYCHOLOGY****Course Description**

Supervised in-depth readings in area of particular interest to student. May be taken twice for credit. Open to students who have completed 15 hours of psychology.

**Credits**

3

**Prerequisites**

- Earned at least 15 hours from:  
Courses from PY -

**PY491 - SPECIAL TOPICS IN PSYCHO****Long Course Title**

SPECIAL TOPICS IN PSYCHOLOGY

**Course Description**

Pre-announced special areas in seminar discussion, laboratory work, or practicum. May be taken twice for credit.

**Credits**

1

**Prerequisites**

- Complete all of the following
  - Earned at least 15 hours from:  
Courses from PY -
  - Must have a class standing of Junior or higher

**PY492 - SPECIAL TOPICS IN PSYCHO****Long Course Title**

SPECIAL TOPICS IN PSYCHOLOGY

**Course Description**

Pre-announced special areas in seminar discussion, laboratory work, or practicum. May be taken twice for credit.

**Credits**

2

**Prerequisites**

- Earned at least 15 hours from:  
Courses from PY -

**PY498 - HUMAN RESEARCH I****Course Description**

Capstone course for the PY major. Human behavior observation and/or experimentation. Students engage in data collection and analysis, and report their findings. Offered Fall Semester only.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - PY302 - RESEARCH METHODS FOR PSYCH (3)
  - Must have a class standing of Senior

**PY499 - HUMAN RESEARCH II****Course Description**

Continuation of PY 498. Offered Spring Semester only.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - PY498 - HUMAN RESEARCH I (3)



**PY500 - INTRO CLINICAL & COUNSELING****Long Course Title**

INTRODUCTION TO CLINICAL & COUNSELING

**Course Description**

This course introduces clinical/counseling psychology and professional psychology. History of diagnosis and treatment, theoretical models in counseling, contemporary practice models, research basis of clinical/counseling psychology, empirically validated techniques, and doctoral program models are covered.

**Credits**

3

**Cross-Listed Course**

PY400 - INTRO TO CLINICAL & COUNSELING

**PY502 - INDUSTRIAL & ORGANIZA PSY****Long Course Title**

INDUSTRIAL & ORGANIZATIONAL PSYCHOLOGY

**Course Description**

Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems.

**Credits**

3

**Equivalent Course(s)**

ISE502 - INDUSTRIAL & ORGANIZA PSY

**Cross-Listed Course**

PY402 - INDUSTRIAL & ORGANIZA PSY

**PY503 - HUMAN FACTORS PSYCHOLOGY****Course Description**

Study of human performance in human-technology-environment systems. Consideration of human capabilities and limitations as related to controls and displays, and the role of human cognition in decision-making and training effectiveness.

**Credits**

3

**Equivalent Course(s)**

ISE503 - HUMAN FACTORS PSYCHOLOGY

**Cross-Listed Course**

PY403 - HUMAN FACTORS PSYCHOLOGY

**PY504 - THEORIES OF COUNSELING****Course Description**

This course is designed to introduce theories of psychotherapy and the process of psychotherapy and counseling. This course is a survey of counseling/psychotherapy models and techniques with emphasis on Empirically Validated Therapies (EVT) and traditional models with substantial support in the research and clinical literature.

**Credits**

3

**Cross-Listed Course**

PY404 - THEORIES OF COUNSELING

**PY505 - PSYCHOPHARMACOLOGY****Course Description**

Introduction to drug classification and action with emphasis on physiological and psychological interactions.

**Credits**

3

**Equivalent Course(s)**

BYS505 - PSYCHOPHARMACOLOGY

**Cross-Listed Course**

PY405 - PSYCHOPHARMACOLOGY

**PY506 - PSYCHOLOGY OF WOMEN****Course Description**

Examines theory and research in the psychological functioning of women, both in the United States and other nations. Topics include achievement and education, mental and physical health issues, biological influences on women's behavior, and victimization of women.

**Credits**

3

**Cross-Listed Course**

PY406 - PSYCHOLOGY OF WOMEN

**PY507 - CROSS-CULTURAL PSYCHOLOGY****Course Description**

Examines psychological similarities and differences between members of industrialized and non-industrialized cultures. Comparisons will include development, social interaction, personality, cognition, psychological health and treatment, work, and acculturation.

**Credits**

3

**Cross-Listed Course**

PY407 - CROSS-CULTURAL PSYCHOLOGY

## **PY508 - TEAMWORK & TEAM PROCESSES**

### **Course Description**

This course provides a basic introduction to teams and teamwork processes. The foundation of the course is research-based; topics will be approached from the context of empirical research that has been conducted. The types of research designs that are typically used in team research are addressed.

### **Credits**

3

### **Cross-Listed Course**

PY408 - TEAMWORK & TEAM PROCESSES

## **PY509 - PSYCHOLOGY OF AGING**

### **Course Description**

This course examines psychological processes in adulthood and aging. Emphasis is placed on contemporary theories, methodological issues and how psychological, biological, social and environmental factors interact to predict growth, maintenance or decline in abilities throughout adulthood and aging.

### **Credits**

3

### **Cross-Listed Course**

PY409 - PSYCHOLOGY OF AGING

## **PY510 - TASK ANALYSIS & PROTOTYPING**

### **Long Course Title**

TASK ANALYSIS & PROTOTYPING

### **Course Description**

This course introduces students to methods for analyzing user actions as they interact with software and tools to complete tasks. Students apply a range of prototype techniques from fast, low-fidelity prototypes to interactive high-fidelity prototypes.

### **Credits**

3

### **Cross-Listed Course**

PY410 - TASK ANALYSIS & PROTOTYPING

## **PY514 - ADVANCED LEARNING**

### **Long Course Title**

ADVANCED LEARNING

### **Course Description**

Analysis of learning principles from simple relationships with animals to the complexities of human language and problem solving.

### **Credits**

3

### **Cross-Listed Course**

PY414 - HUMAN RESEARCH:LEARNING

**PY515 - ADV. DEVELOPMENTAL PSYCHOLOGY****Long Course Title**

ADVANCED DEVELOPMENTAL PSYCHOLOGY

**Course Description**

Examination of cognitive, psychoanalytic, ethological, behavioral, and humanistic theories of development.

**Credits**

3

**Cross-Listed Course**

PY415 - DEVELOPMENTAL PSYCHOLOGY

**PY520 - SPECIAL TOPICS****Course Description**

Pre-announced special areas in seminar discussion, laboratory work, or practicum. May be taken twice for credit.

**Credits**

3

**Cross-Listed Course**

PY420 - SPECIAL TOPICS

**PY530 - PSYCHOMETRICS****Course Description**

History and development of psychological testing with special emphasis given to both theory and process of effective evaluation.

**Credits**

3

**Cross-Listed Course**

PY430 - PSYCHOMETRICS

**PY533 - PSYCHOPATHOLOGY****Course Description**

Selected disorders such as depression, anxiety disorders, and personality disorders from different theoretical orientations with emphasis on cognitive behavioral theory.

**Credits**

3

**PY534 - PSYCHOLOGY AND LAW****Course Description**

This seminar is a survey of the major topics represented in the field of Psychology and Law. We will focus on how psychological research can contribute to a better understanding of issues related to law.

**Credits**

3

**Cross-Listed Course**

PY434 - PSYCHOLOGY AND LAW

**PY537 - PSYCHOBIOLOGY STRESS & ILLNESS****Long Course Title**

PSYCHOBIOLOGY STRESS & ILLNESS

**Course Description**

Overview of physiological stress responses and their influence on health behavior and illness.

**Credits**

3

**Equivalent Course(s)**

BYS537 - PSYCHOBIOLOGY STRESS & ILLNESS

**Cross-Listed Course**

PY437 - PSYCHOBIOLOGY STRESS & ILLNESS

**PY580 - PROSEMINAR: COGNITIVE****Course Description**

Critical examination of the cognitive approach to areas of study within psychology. Students are responsible for library research, writings, and presentation of selected topics.

**Credits**

3

**Cross-Listed Course**

PY480 - COGNITION

**PY607 - PROFESSIONAL DEV IN RES & TCHG****Long Course Title**

PROFESSIONAL DEVELOPMENT IN RESEARCH AND TEACHING

**Course Description**

Focus on developing knowledge and skills relevant to future goals regarding teaching, either in academic or professional settings.

**Credits**

3

**PY608 - GRAD PRACT TCHG & CAREER EXPLO****Long Course Title**

GRADUATE PRACTICE TEACHING AND CAREER EXPLORATION

**Course Description**

Focus on developing knowledge and skills relevant to future goals, such as career exploration, internship opportunities, resume writing, and graduate program exploration. Required of first year students.

**Credits**

1

**PY610 - EXPERIMENTAL DESIGN****Long Course Title**

EXPERIMENTAL DESIGN

**Course Description**

Design and use of the experiment as an inferential tool. Issues pertaining to reliability, validity, manipulation of independent variables, and sampling will be examined. Implementing statistical techniques for analysis of data generated by experimental designs.

**Credits**

3

**PY611 - STAT FOR EXPERI METHODS****Long Course Title**

STATISTICS FOR EXPERIMENTAL METHODS

**Course Description**

Statistical techniques for analysis of data generated by experimental designs.

**Credits**

3

**PY612 - MULTIVARIATE ANALYSIS****Long Course Title**

MULTIVARIATE ANALYSIS

**Course Description**

Covers how to conduct, interpret, and summarize multivariate analyses.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - PY611 - STAT FOR EXPERI METHODS (3)

**PY615 - GRADUATE SEMINAR****Course Description**

Intensive analysis of selected theoretical or applied topics relating to psychological development. May be taken more than once for credit.

**Credits**

3

**PY624 - HUMAN FACTORS IN SYSTEM DESIGN****Course Description**

Introduces basic principles of methods analysis and ergonomics. Methods analysis topics include: work measurement tools, work sampling, job analysis, job evaluation, and development and use of flow and activity charts for methods improvement.

**Credits**

3

**PY641 - CONC READ/RES SPECIALIZ AREA****Long Course Title**

CONCENTRATED READINGS/RESEARCH SPECIALIZED AREA

**Course Description**

Independent readings and/or experiments in an area within the student's field of specialization. One requirement is a research proposal, which will be reviewed by the faculty advisor. May be taken more than once for credit.

**Credits**

3

**Prerequisites**

- Instructor Permission

**PY650 - SUPERVISED RESEARCH****Course Description**

Laboratory or applied research concerning a particular topic, approved and supervised by a PY faculty member. The student may work on an independent or group project. May be taken more than once for credit.

**Credits**

1 - 6

**PY675 - INTERNSHIP IN APPLD PSYCHOLOGY****Long Course Title**

INTERNSHIP IN APPLIED PSYCHOLOGY

**Course Description**

Students are placed in a field setting under the supervision of a faculty member and a site supervisor. Students receive site-specific training, experience, and individual supervision.

**Credits**

1 - 6

**PY699 - MASTER'S THESIS****Long Course Title**

MASTER'S THESIS

**Course Description**

Required each semester a student is working and receiving faculty direction on a master's thesis.

**Credits**

0 - 6

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - PY641 - CONC READ/RES SPECIALIZ AREA (3)

**PY701 - HUMAN SYSTEM INTEGRATION****Long Course Title**

HUMAN SYSTEM INTEGRATION

**Course Description**

Discover how to address human-related issues in system development in an integrated manner. Explore principles of human factors engineering, personnel selection, training, safety, and other HSI technical domains. Learn how these activities should be integrated to reduce personnel costs and improve system performance.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY702 - COMPU CONCEPTS & INTRO PROG****Long Course Title**

COMPUTATIONAL CONCEPTS & INTRODUCTION TO SOFTWARE PROGRAMMING FOR USER RESEARCH

**Course Description**

Introduces basic-computational concepts and programming skills needed to work with interactive systems. Draws on topics such as log analysis, visualization, prototyping, and data mining. Students analyze data to inform user research and design.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP



**PY703 - PY HUMAN-COMPUTER INTERACTION****Long Course Title**

PSYCHOLOGY IN HUMAN-COMPUTER INTERACTION

**Course Description**

Three broad categories of topics within human-computer interaction (HCI) are covered: (a) principles and characteristics of the interaction between humans and computers; (b) techniques for designing and evaluating user-centered systems; and (c) cutting-edge research and development in HCI.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY704 - HUMAN MACHINE SYSTEM DESIGN****Long Course Title**

HUMAN MACHINE SYSTEM DESIGN

**Course Description**

Techniques for man-machine system designs in which cognitive and dynamic aspects are of major importance. Applications to computer-interface design, auto/semiautomated systems, military systems, etc. Topics include information processing, decision making, reaction times and signal detection theory.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY705 - USABILITY EVAL & TESTING****Long Course Title**

USABILITY EVALUATION AND TESTING

**Course Description**

This course covers all of the aspects of specifying, planning, executing, and reporting usability assessments on products, services and systems. Formative and summative assessments are covered, as are "discount" usability methods. This course is project based.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY706 - MGMT COMPLEX SYSTEMS****Long Course Title**

MANAGEMENT OF COMPLEX SYSTEMS

**Course Description**

Focuses on how to design and improve complex work systems. Emphasis on agile development, including sprints using scrum teams to achieve rapid interaction design with system users, developers and owners. Investigates decision support systems, sense making and adaptation in ambiguous situations.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY707 - ERGONOMICS & REGA USER CEN DES****Long Course Title**

ERGONOMICS AND REGULATIONS IN USER CENTERED DESIGN

**Course Description**

Covers international, military and occupational health and safety standard requirements, regulations and guidelines for ergonomics of human-centered design principles and activities throughout the life cycle of human interactive or work systems.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY708 - RAPID PROTOTYPING****Long Course Title**

RAPID PROTOTYPING

**Course Description**

Review fundamentals of designing and prototyping human-centered interactive systems and environments that include software and hardware components. Students build projects using electronic devices and fabrication tools. Provides hands on experience in a project-based, studio environment.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY709 - HUMAN ARTIFI INTELLI INTERACT****Long Course Title**

HUMAN ARTIFICIAL INTELLIGENCE INTERACTION

**Course Description**

Addresses agency and initiative, AI and ethics, bias and transparency, confidence and errors, human augmentation and amplification, trust, misdirected-initiative systems, and programming by example. Students should be comfortable with programming; assignments will primarily use Javascript.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY710 - MACHINE LEARN FOR SOC/BEH RES****Long Course Title**

MACHINE LEARNING FOR SOCIAL/BEHAVIORAL RESEARCH

**Course Description**

Covers a wide range of learning algorithms that can be applied to a variety of problems such as decision trees, rule-based classification, support vector machines, Bayesian networks, and clustering. This course does not assume any prior exposure to machine learning theory or practice.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: PHD AEP
  - 3 hours from:
    - PY611 - STAT FOR EXPERI METHODS (3)
  - or by permission from instructor

**PY711 - COMPUTATIONAL PY****Long Course Title**

COMPUTATIONAL PSYCHOLOGY

**Course Description**

The application of computational principles to understanding human behavior. Hands on experience with modeling tools to analyze large data sets.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: PHD AEP
  - 3 hours from:
    - PY611 - STAT FOR EXPERI METHODS (3)
  - or by permission from instructor

**PY712 - SOC COG NEUROSCIENCE****Long Course Title**

SOCIAL COGNITIVE NEUROSCIENCE

**Course Description**

Addresses interactions between social-level phenomena, cognitive-level processes, and neural mechanisms that underlie these events. This course will cover basic neurophysiology and cognitive processing theory with the goal of understanding how these foster social preception, cognition and actions.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY713 - QUANTITATIVE STAT METHODS****Long Course Title**

QUANTITATIVE STATISTICAL METHODS

**Course Description**

Covers methods developed for rigorous quantitative inquiry in Psychology. Students will become familiar with various research design, measurement, and advanced analytic strategies broadly applicable to theory-driven and data-informed quantitative research, the strengths and limitations of each.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: PHD AEP
  - 3 hours from:
    - PY611 - STAT FOR EXPERI METHODS (3)
  - or by permission from instructor

**PY714 - MULTIVARIATE STATS****Long Course Title**

MULTIVARIATE STATISTICS

**Course Description**

Course covers advanced-level multivariate statistical methods (e.g., GLM, MANOVA, MANCOVA), discriminant function analysis, canonical correlation analysis, cluster analysis, and principal components analysis. The focus of this course will be on conceptual understanding and computer applications.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: PHD AEP
  - 3 hours from:
    - PY611 - STAT FOR EXPERI METHODS (3)
  - or by permission from instructor

**PY715 - R FOR DATA SCIENCE****Long Course Title**

R FOR DATA SCIENCE

**Course Description**

This class will learn how to manipulate larger data sets with current best practices and advancements in data science. This will all be taught using R, a programming environment that is well suited for data science.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: PHD AEP
  - 3 hours from:
    - PY611 - STAT FOR EXPERI METHODS (3)
  - or by permission from instructor

**PY718 - ADV STRUC EQUA MODELING****Long Course Title**

ADVANCED STRUCTURAL EQUATION MODELING

**Course Description**

Provides the basic theoretical background necessary for the application of Structural Equation Modeling (SEM) to research problems including model specification, identification, path analysis, estimation, testing fit, respecification, confirmatory factor analysis the interpretation of SEM results.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: PHD AEP
  - Earn a minimum grade of C- in all of the following:
    - PY611 - STAT FOR EXPERI METHODS (3)

**PY719 - HISTORY & SYSTEMS****Long Course Title**

HISTORY & SYSTEMS

**Course Description**

Survey of psychological systems (theory, research, perspectives) regarding human behavior and mental processes from ancient times to the present.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY725 - EYEWITNESS PY****Long Course Title**

EYEWITNESS PSYCHOLOGY

**Course Description**

The course covers research and application of psychology knowledge or concepts to the legal system, emphasizing eyewitness memory and topics as, description accuracy, weapon focus, line-up construction, line up administration, showup identification, confidence, and post identification feedback.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY730 - FORENSIC/INVEST INTERVIEWS****Long Course Title**

FORENSIC/INVESTIGATIVE INTERVIEWS

**Course Description**

Covers the science of forensic interviewing and detecting deception from an applied cognitive and social perspective. The topics will include: false confessions, The Reid method of interrogation, detecting deception, and implications of research for justice system practices and policies.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY735 - CHILD WITNESSES****Long Course Title**

CHILD WITNESSES

**Course Description**

Children and adolescents all too frequently become involved in the legal system as victims, witnesses, or perpetrators of crime. This course will apply relevant development research and theory to legal issues of children and adolescents.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY740 - INTERROGATION & DECEPTION****Long Course Title**

INTERROGATION & DECEPTION

**Course Description**

In this course students will learn about the science of interrogations and confessions and how to detect deception.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY745 - WRONGFUL CONVICTION****Long Course Title**

WRONGFUL CONVICTION

**Course Description**

This class will examine the contributing factors of wrongful convictions as outlined in the Innocence Project and the National Registry of Exonerations, including eyewitness identification; false confessions, jailhouse informants, police and prosecutorial misconduct and junk science.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY750 - ASSMNT COMPETENT STAND TRIAL****Long Course Title**

ASSESSMENT OF COMPETENCY TO STAND TRIAL

**Course Description**

This course will address the various factors that courts evaluate when determining whether a defendant is competent to stand trial.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY762 - PERFORM MEASUR/PRODU IMPROVEMT****Course Description**

Productivity and performance defined and used to analyze current competitive position of important sectors of US industry with respect to national and international competition.

**Credits**

3

**PY775 - PROSEMINAR SOC PY****Long Course Title**

PROSEMINAR IN SOCIAL PSYCHOLOGY

**Course Description**

Social psychological theories (e.g., attitudes, social cognition, social influence and persuasion) will be examined to understand and address several areas in legal system, including interrogations, conducting line-ups, interviewing child and adult witnesses; jury decision making, race and gender.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY780 - APPLIED COGNITIVE PY****Long Course Title**

APPLIED COGNITIVE PSYCHOLOGY

**Course Description**

This course introduces the basic processes involved in human information processing, including perception, attention, memory, knowledge representations, language, problem-solving, reasoning, and decision-making.

**Credits**

3

**Prerequisites**

- Admitted to: PHD AEP

**PY799 - DISSERTATION****Long Course Title**

DISSERTATION

**Course Description**

Required each semester a student is working and receiving faculty direction on a dissertation.

**Credits**

0 - 6

**Prerequisites**

- Admitted to: PHD AEP



## **SCI199 - INTRO TO PHYS SCIENCE RES**

### **Course Description**

Understand the segmentation of research through concepts such as heat transfer, Newtonian mechanics, chemical propulsion, computer modeling and simulation, biology in space, research ethics, technical writing, and data analysis. Students will be equipped with skills critical to contributing to scientific research projects. Prerequisite: Available online to high school students that have previously participated in the U.S. Space & Rocket Center - Aviation Challenge® Mach III or Advanced Space Academy®.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of S in all of the following:
  - AST109 - INTRODUCTION TO SPACE SCIENCE (1)

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## **Sociology**

### **SOC100 - INTRO TO SOCIOLOGY**

#### **Long Course Title**

INTRODUCTION TO SOCIOLOGY

#### **Course Description**

An introduction to the critical and scientific study of society, culture, social institutions and social change. Illuminates the social and cultural context of our lives and is useful for exploring contemporary social issues, problems and change in society.

#### **Credits**

3

#### **Charger Foundations**

Area IV: Social & Behavioral Sciences

### **SOC103 - INTRO TO CRIMINOLOGY**

#### **Long Course Title**

INTRODUCTION TO CRIMINOLOGY

#### **Course Description**

A broad introduction to the sociological study of crime and the criminal justice system in the United States exploring sources of crime, measurement of crime, theories of crime, and the criminal justice system.

#### **Credits**

3

#### **Charger Foundations**

Area IV: Social & Behavioral Sciences

**SOC206 - MARRIAGE AND FAMILY****Long Course Title**

MARRIAGE AND FAMILY

**Course Description**

Explores family forms and functions across history and across cultures. Students will learn how the family affects and is affected by other social institutions, recent trends in the American family, the contexts in which marriage and families evolve, and key inequalities within and between families.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC301 - RESEARCH METHODS****Long Course Title**

RESEARCH METHODS

**Course Description**

The object of this course is for students to be able to read, interpret, and explain scientific research in social science. Course covers key elements and process of sociological research methods, both qualitative and quantitative.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC302 - SOCIOLOGICAL THEORY****Long Course Title**

SOCIOLOGICAL THEORY

**Course Description**

This course traces the development of major trends of sociological theory, past and present, and major theoretical problem areas. It also addresses how the socio-historical context within which the texts were written influences the issues and ideas expressed.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC303 - STATISTICS/SOCIAL SCIENCES****Long Course Title**

STATISTICS FOR THE SOCIAL SCIENCES

**Course Description**

Introduction to the basic quantitative data analysis techniques used by social scientists. Explore the ways researchers use statistics to examine and test ideas about the social world. In the lab, students learn how to use the statistical software SPSS to analyze social science datasets.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - MA105 - NATURE OF MATHEMATICS (3)
  - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
  - MA110 - FINITE MATHEMATICS (3)
  - MA110S - FINITE MATHEMATICS S-SECTION (3)
  - MA112 - PRECALCULUS ALGEBRA (3)
  - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA115 - PRECALCULUS ALGEBRA & TRIG (4)
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
  - MA171 - CALCULUS I (4)
  - MA171S - CALCULUS I S-SECTION (4)
  - MA181 - INTRODUCTION TO STATISTICS (3)

**SOC304 - STATISTICS LAB****Long Course Title**

STATISTICS FOR THE SOCIAL SCIENCES LAB

**Course Description**

Complements material for SOC 303

**Credits**

1

**SOC306 - SOCIOLOGY OF GENDER****Long Course Title**

SOCIOLOGY OF GENDER

**Course Description**

Explores how social relationships create, structure and reinforce gender differences and inequalities. Students will learn about the social construction of gender, gender socialization, gender roles, and gender inequalities in income, poverty, occupation, and violence.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC307 - SOCIOLOGY OF LAW****Long Course Title**

SOCIOLOGY OF LAW

**Course Description**

This course examines the relationship between law and society from a variety of theoretical perspectives. Topics include the social organization of legal institutions, cultural meanings of law, and social interactions among different actors in the legal context (police, lawyers, judges, legislators, etc).

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC309 - SOCIOLOGY OF SEXUALITY****Long Course Title**

SOCIOLOGY OF SEXUALITY

**Course Description**

A research based study of sexuality focusing on how it is constructed, experienced, challenged, and changed within society. Upon completion of the course students will be able to recognize, understand, and articulate how society both structures and is structured by sexuality.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC313 - QUALITATIVE RESEARCH METHODS****Long Course Title**

QUALITATIVE RESEARCH METHODS

**Course Description**

Teaches ethnography, interviewing, focus groups, and content analysis. Includes an in-class data analysis practicum. Upon completion, students will be able to understand, articulate, and assess qualitative methods as well as independently collect, analyze, and report findings from qualitative data.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

## **SOC319 - DEVIANCE & SOCIAL CONTROL**

### **Long Course Title**

DEVIANCE & SOCIAL CONTROL

### **Course Description**

Examines several approaches to studying deviant behavior and its social control, with emphasis on the social construction of deviance and societal reactions to it. The focus is generally on deviation and control in the U.S.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

## **SOC320 - SOCIOLOGY OF RELIGION**

### **Long Course Title**

SOCIOLOGY OF RELIGION

### **Course Description**

Study of religion as a social phenomenon. The course examines sociological theories of religious behavior, religious beliefs, religion as a social institution, religious organization, new religious movements, and religion and social change.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Earn a minimum grade of D- in all of the following:
    - SOC100 - INTRO TO SOCIOLOGY (3)
  - Instructor Permission

## **SOC325 - SOCIOLOGY OF EDUCATION**

### **Long Course Title**

SOCIOLOGY OF EDUCATION

### **Course Description**

This course examines education systems and policies from a sociological perspective. We ask what and how students learn, the function of schools in society, results of recent policy decisions, and how educational systems interact with political, economic, cultural and family institutions.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

## **SOC330 - RACE AND ETHNICITY**

### **Long Course Title**

RACE AND ETHNICITY

### **Course Description**

Examines the historical relationship between race, ethnicity and economic class/opportunity; and the social construction of ethnicity and race. The emphasis is on race and ethnicity in the U.S. with some discussion of international issues.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

## **SOC335 - SOCIOLOGY OF HEALTH & MEDICINE**

### **Long Course Title**

SOCIOLOGY OF HEALTH AND MEDICINE

### **Course Description**

This course examines the social, epidemiological, and personal aspects of illness, disease and health care in the contemporary US. Our primary mission is to uncover answers to questions like: Who gets sick and who remains healthy? Who has a long life? Who has a short one? What is good in medical care, and what could be made better? How do doctors and other medical professionals care for/treat/cure people who are sick? What is the relationship between economic inequality and health? What issues of justice and ethics are raised by the answers to these questions? We ask these questions because we want to know the ways in which social factors influence us from the inside out.

### **Credits**

3

### **Prerequisites**

- 3 hours from:
  - SOC100 - INTRO TO SOCIOLOGY (3)

## **SOC340 - SPECIAL TOPICS**

### **Course Description**

Nontraditional topics of current sociological interest. Title of course and number of credit hours when offered will appear in course schedule along with prerequisites necessary for admission to course. May be taken more than once for credit as long as subtitles differ.

### **Credits**

1 - 3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC350 - MONEY AND POWER****Long Course Title**

MONEY AND POWER

**Course Description**

This course examines how access to money and power shape life outcomes. Students will learn about factors shaping historical and current patterns of economic inequality in the U.S., including labor markets, corporations, immigration, and changing social welfare policies. Along the way, we explore who has the power to make decisions and shape access, opportunities for social mobility, the roles of gender and race, and patterns of privilege and oppression.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC375 - SOCIAL PSYCHOLOGY****Long Course Title**

SOCIAL PSYCHOLOGY

**Course Description**

Fundamental principles of group processes, social influence, and group structure. Development of group solidarity, cohesion, intergroup conflict and cooperation, communication, leadership, opinion, propaganda, and suggestion.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - PY101 - GENERAL PSYCHOLOGY I (3)
  - SOC100 - INTRO TO SOCIOLOGY (3)

**Equivalent Course(s)**

PY375 - SOCIAL PSYCHOLOGY

## **SOC382 - WHITE COLLAR CRIME**

### **Long Course Title**

WHITE COLLAR CRIME

### **Course Description**

This course explores white collar crime in depth, considering both how it is defined and theoretical perspectives about why it occurs. Broadly, the course considers occupational crimes (e.g. embezzlement & employee theft), corporate crimes (e.g., securities fraud & price fixing), and political crimes (e.g., state corruption & repression). Students also discuss its costs to society, identifying both perpetrators and victims.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)
  - SOC103 - INTRO TO CRIMINOLOGY (3)

## **SOC383 - RELIGION AND CRIME**

### **Course Description**

Whether you are religious or not, religion affects all of our lives, from its influence on those around us to its impact on public policy. In this course, we will examine the intersection of religion and crime using the tools of criminology and sociology. Are religious individuals less likely to commit crime? Can religious communities influence local crime? Does conservative and liberal religion influence crime in the same way? To what degree are individuals victimized because of their religion? We will learn to apply concepts and theories from criminology and the sociology of religion to address these questions, and more. Offered every third semester.

### **Credits**

3

### **Prerequisites**

- 3 hours from:
  - SOC100 - INTRO TO SOCIOLOGY (3)
  - SOC103 - INTRO TO CRIMINOLOGY (3)

## **SOC384 - DRUGS AND SOCIETY**

### **Long Course Title**

DRUGS AND SOCIETY

### **Course Description**

This course focuses on understanding drug use from sociological and criminological perspectives; it examines the prevalence of drug use, the impact of drug use on individuals and society, and society's response to drugs.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)
  - SOC103 - INTRO TO CRIMINOLOGY (3)



**SOC390 - READINGS & INDIVIDUAL RES****Long Course Title**

READINGS & INDIVIDUAL RESEARCH

**Course Description**

Supervised readings or in-depth research or both in area of specialized interest to student or instructor. May be taken twice for credit with advisor's approval.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC395 - COMMUNITY SERVICES INTERNSHIP****Long Course Title**

COMMUNITY SERVICES INTERNSHIP

**Course Description**

An experiential-learning course for students who envision working in social service organizations. Internship opportunity is initiated by student and course includes an academic component of readings and assignments agreed upon by student, organizational representative and the Internship Coordinator.

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Admitted to: BA SOC
  - Complete 1 of the following
    - Must have a class standing of Junior
    - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - SOC100 - INTRO TO SOCIOLOGY (3)

**SOC431 - ADVANCED SPECIAL TOPICS****Long Course Title**

ADVANCED SPECIAL TOPICS

**Course Description**

Special topics of current sociological interest. Course title, credit hours and prerequisites will appear in course schedule. May be taken more than once for credit as long as subtitles differ. Different from SOC 340 Special Topics in terms of level of expectations and/or, prerequisites.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

## **SOC495 - SENIOR CAPSTONE SEMINAR**

### **Long Course Title**

SENIOR CAPSTONE SEMINAR

### **Course Description**

This course allows senior sociology majors to transition from being consumers of sociological knowledge, to being producers and practitioners. Students can choose one of two tracks for this course: completing either an independent research project or an internship at a local social service organization.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC301 - RESEARCH METHODS (3)

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## **Space Science**

## **SPA123 - INTRO TO MODERN SPACE SCIENCE**

### **Long Course Title**

INTRODUCTION TO MODERN SPACE SCIENCE

### **Course Description**

The course introduces the student to the frontiers and problems being addressed by modern Space Science and technology. It includes the study of space physics, the upper atmosphere of the Earth, solar physics, planetary and exoplanetary physics, astrophysics, modern cosmology, including relativity and gravitation, the intersection of quantum theory and astrophysics, astrobiology and life in the universe.

### **Credits**

3

## **SPA489 - SELECTED TOPICS**

### **Course Description**

Selected topics in Space Science not covered in other courses.

### **Credits**

3

## **SPA522 - INTRODUCTION TO PLASMA PHYSICS**

### **Course Description**

Provides students with an introduction to the basic physical processes associated with plasmas, which permeate all space environments. Both particle and fluid approaches are introduced, and a variety of elementary drift and wave phenomena are derived. Applications of the theory to various plasma instabilities are explored, along with specific examples of where these may occur in space science. While the goal of this course is to prepare students for more advanced topics in space physics, many of the fundamentals covered are equally relevant for students interested in plasma confinement and its associated engineering challenges.

### **Credits**

3

**SPA526 - SPACE WEATHER****Course Description**

Physics of solar active regions, physics of solar flares and coronal mass ejections (CMEs), the propagation of CMEs, the acceleration and propagation of solar energetic particles, CME interaction with earth's magnetosphere.

**Credits**

3

**SPA532 - SPACE ORIENTATION EDUCATORS****Course Description**

A weeklong course at the U.S. Space and Rocket Center in Huntsville, Alabama for pre-service and in-service teachers. The inquiry based workshops are taught around the theme of space exploration include activities to be done across the curriculum. All activities are correlated to National Math, Science, Technology, Social Studies, and Reading Standards. Activities based on curriculum developed by NASA, CAP, NSATA, and the USSRC. Topics include moon, mars, rocketry, propulsion, hydroponics, math, biology, history and literature.

**Credits**

3

**SPA582 - SCIENCE CAREER PREP****Course Description**

This course will review many of the soft skills necessary to function as a successful scientist, whether in an academic career, in a federal laboratory, a for-profit research career in a company, or even a commercial career. Your career begins with graduate school, and learning the skills for a successful graduate career will carry over to your professional career. The goal of the course is impart wisdom from successful graduate students and career scientists, providing both a basis for a successful graduate career and your subsequent career. The course will help students reduce the learning things "the hard way" approach by providing guidance for your career path. Each week will focus on a different skill that a career scientist requires.

**Credits**

1

**SPA610 - ADV MATH METHDS FOR SPA SCI****Long Course Title**

ADVANCED MATH METHODS FOR SPACE SCIENCE

**Course Description**

This course will focus on analytical methods for a series of advanced topics with an emphasis on practical applications to space science, such as Vector and Fourier Analysis, ODEs/PDEs in space science, and Green's functions, Spherical Harmonics, Spectral Analysis, Wavelet Transforms, Fractals and Complexity, and Inverse Problems.

**Credits**

3

## **SPA622 - CLASSICAL & QUANTUM STATISTICS**

### **Course Description**

Statistical methods, systems of particles, statistical thermodynamics, kinetic theory, methods of statistical mechanics, equilibrium between phases of chemical species. Quantum statistics of identical particles. Spin and statistics. Bose-Einstein and Fermi-Dirac distributions.

### **Credits**

3

## **SPA623 - TRANSPORT PROCESSES IN SPACE**

### **Course Description**

Course presents a systematic treatment of classical and anomalous transport theory for gases, plasmas, energetic particles, and low frequency turbulence. The Chapman-Enskog approach is used to derive transport coefficients for neutral gases and collisional plasmas. The relationship between multi-fluid and MHD models is presented. Weak solutions and shock waves are discussed. The transport of energetic particles that experience scattering by magnetic field fluctuations is presented, together with basic models of the turbulence responsible for scattering turbulence transport in expanding flows such as the solar wind.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - SPA622 - CLASSICAL & QUANTUM STATISTICS (3)

## **SPA624 - SPACE PHYSICS I**

### **Course Description**

A broad introduction to particle, MHD, and kinetic phenomena in space. This course is intended for all students interested in space, astro-, and plasma physics. Course covers fusion processes inside the Sun, solar neutrinos, solar atmosphere, coronal magnetic fields, physical mechanisms of magnetic field line reconnection and magnetic dynamo, the interaction between the solar wind with planets and the interstellar medium, corotating and merged interaction regions, collisional and collisionless shock waves in space. Includes an introduction to charged particle acceleration in the heliosphere. Examines differences between planetary magnetospheres, solar-terrestrial relationships, solar activity, climate, and culture.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of B- in all of the following:
    - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - Earned minimum grade of B- or concurrently enrolled in all of the following:
    - SPA631 - WAVES AND FIELDS (3)

## **SPA625 - SPACE PHYSICS II**

### **Course Description**

The course develops a deeper understanding and knowledge of plasma instabilities, kinetic dispersion relations, microinstabilities, electrostatic and electromagnetic instabilities; advanced magnetohydrodynamics including MHD turbulence, reconnection; wave-particle interactions, including basic quasi-linear theory; weak and strong wave turbulence; nonlinear waves; collisionless shock waves.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA624 - SPACE PHYSICS I (3)

## **SPA627 - HIGH ENERGY RADIATION DET&MSRM**

### **Long Course Title**

HIGH ENERGY RADIATION DETECTION AND MEASUREMENT

### **Course Description**

This course will provide students with basic understanding of radiation detection for space-based missions. This course will cover the basic nuclear processes in radioactive sources and the interaction of radiation with matter. The statistical treatment of experimental data will be reviewed. General characteristics common to all types of detectors will be given. We will then cover specific classes of detectors focusing on ionization, scintillation and semiconductor detectors. Light collection and detection techniques will follow. The student will then be introduced to basic signal processing and timing techniques important to a successful instrument design. This course will be taught from a physicist point of view emphasizing the physical processes and interactions that make detection of radiation possible. This course is suitable for those students interested in detector development or astrophysical data analysis using state-of-the-art technology.

### **Credits**

3

## **SPA628 - SOLAR PHYSICS**

### **Course Description**

The workings of the Sun, from its interior to the outer reaches of the corona and solar wind with emphasis on the fundamental physical processes from both observational and theoretical point of views, including energy release in core of the Sun and its transport to the solar atmosphere, dynamo theory and the generation of the magnetic field of the Sun, solar wind model and interplanetary magnetic field, kinetic process and particle acceleration in solar flares, plasma emission and radiation transfer, electron beams and solar radio bursts, magnetic reconnection and solar flares.

### **Credits**

3

## **SPA629 - ASTROPHYSICAL FLUID DYNAMICS**

### **Course Description**

Covers astrophysical phenomena occurring outside the boundaries of the solar system. Subjects include stellar structure and rotation, waves and instabilities in astrophysical plasmas, the physics of spherical and disk accretion, supernova blast waves, and charged particle transport and acceleration in cosmic plasmas. Introduction to the principles of stellar formation, helioseismology, stellar dynamo, coronal heating, and astrophysical turbulence.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)

## **SPA630 - WAVES IN FLUIDS**

### **Course Description**

Comprehensive introduction to the science of wave motions in fluids. Waves and first-order (hyperbolic) equations, wave hierarchies; gas dynamics and fluid equations; acoustics, nonlinear plane waves, simple waves, shock waves and structure, shock reflection, similarity solutions, supersonic flows in gas dynamics; the wave equation, including plane, spherical and cylindrical waves, geometrical optics, including far-field approximation, caustics, nonhomogeneous media, anisotropy; water waves, including shallow water theory; group velocity, dispersion; nonlinear waves, including Korteweg-de Vries, sine-Gordon, and nonlinear Schroedinger equations, solitons.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA610 - ADV MATH METHDS FOR SPA SCI (3)

## **SPA631 - WAVES AND FIELDS**

### **Course Description**

This course will cover the following topics: 1) Review of static solutions of the Maxwell equations. Boundary-value applications. Green function solutions. 2) Covariant electrodynamics: Basic application of special relativity to charged particles and fields. Lienard-Wiechert potentials. Solutions to the wave equation. 3) Space Science applications: Thermal Spectra and Particle Distributions. Cyclotron and synchrotron radiation. Bremsstrahlung and collisions. Compton Scattering.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA610 - ADV MATH METHDS FOR SPA SCI (3)

## **SPA632 - IONOSPHERIC AND MAGNETOSPHERIC**

### **Long Course Title**

IONOSPHERIC AND MAGNETOSPHERIC PHYSICS

### **Course Description**

This course will give insights to the Earth's ionosphere and magnetosphere. Seminars cover basic concepts and fundamental plasma physics relevant to the ionosphere and magnetosphere, electrodynamics, electric circuit systems, geomagnetic storms, and substorms, auroras, etc. Training projects involve the use of satellite data and ground-based observations.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)

## **SPA634 - INTRO TO SPACE SCIENCE**

### **Long Course Title**

INTRODUCTION TO SPACE SCIENCE

### **Course Description**

In this course we survey a broad range of research areas that span a multitude of space environments. In each case we investigate the physical conditions of the environment, and look at some of the key current and past science questions and the techniques used to address them. We begin by studying basics of plasma physics and then apply the knowledge to the Sun, from its inner workings to its unusually hot atmosphere. This sets the stage for our subsequent survey of the solar wind and its interaction with planets that leads to the formation of magnetospheres. We also explore the techniques used to understand various space environments, from the design of detectors through the methods used to understand the collected data, to theoretical models and the computational techniques used to solve them.

### **Credits**

3

## **SPA636 - ADV SPACE WEATHER**

### **Long Course Title**

ADVANCED SPACE WEATHER

### **Course Description**

Advanced topics in Space Weather with emphasis on practical effects and impacts on human technology and society: interaction of solar disturbances with Earth's magnetosphere, Solar Energetic Particles, and their effects; Forecasting and Nowcasting of Space Weather; Space Weather at Mars and other planets.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)

**SPA639 - NONLINEAR KINETICS PROCESSES****Long Course Title**

NONLINEAR KINETICS PROCESSES IN SPACE PLASMA

**Course Description**

Nonlinear kinetic processes dominate explosive events throughout space and the associated particle acceleration, transport, and radiation. Solitons and coherent plasma emission are commonly observed in magnetospheric substorms and solar flares. This course will give a broad introduction to the nonlinear kinetic processes, including solitons, Bernstein-Greene-Kruskal modes, phase mixing, and plasma heating, plasma coherent emission, and nonlinear wave-wave and wave-particle couplings, and the application in magnetic reconnection, particle acceleration, and transport in space plasma. The kinetic instabilities associated with these nonlinear processes are introduced. The small numerical projects will be assigned to students to understand these nonlinear phenomena.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - SPA624 - SPACE PHYSICS I (3)

**Restrictions**

Restricted to College of Science

**SPA662 - COMPUTATIONAL PHYSICS****Course Description**

Numerical methods to solve common physics problems using C or Fortran. Numerical integration and differentiation, root finding, data fitting, introductory stochastic methods, linear and non-linear differential equations. Fourier analysis. Elliptic parabolic hyperbolic partial differential equations via finite differences, integro-differential equations. Applications to classical dynamics, electromagnetism, statistical and quantum physics.

**Credits**

3



**SPA663 - COMPUTATIONAL FLUID DYNMC &MHD****Long Course Title**

COMPUTATIONAL FLUID DYNAMICS AND MAGNETOHYDRODYNAMICS

**Course Description**

Numerical simulations of various problems in space physics, astrophysics, engineering, and plasma dynamics. Finite-volume and finite-difference, shock-capturing and shock-fitting methods for hyperbolic equations, including gas dynamics, MHD, and shallow water equations. The hierarchy of numerical methods is introduced in a systematic way, starting from standard linear schemes and arriving at modern discontinuity-capturing non-linear methods. Exact and approximate Riemann solvers, characteristic analysis of underlying equations. Different implementations of boundary conditions are introduced in relation with the mathematical properties of quasilinear hyperbolic systems.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA624 - SPACE PHYSICS I (3)
  - SPA662 - COMPUTATIONAL PHYSICS (3)

**SPA664 - COMPUTATIONAL PLASMA PHYSICS****Long Course Title**

COMPUTATIONAL PLASMA PHYSICS

**Course Description**

Particle-mesh kinetic plasma simulations for clouds of charge. Developing electrostatic, electromagnetic, magnetoinductive, and quasi-neutral plasma solvers in one and two dimensions using C++. Applications to mean instabilities, collisionless shock waves, magnetic reconnection.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C in all of the following:
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - SPA662 - COMPUTATIONAL PHYSICS (3)

## **SPA665 - STOCHASTIC METHODS COMP SCI**

### **Long Course Title**

STOCHASTIC METHODS FOR COMPUTATIONAL SCIENCES

### **Course Description**

Stochastic processes, Langevin's equation, Ito calculus, Fokker-Planck equation, Levi processes, master equation, Euler-Maruyama, Milstein, and Runge-Kutta explicit and implicit schemes. Applications to turbulent diffusion, dynamical system stability; examples from chemistry, biology and finance.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C in all of the following:
  - SPA662 - COMPUTATIONAL PHYSICS (3)

### **Restrictions**

Graduate Students

## **SPA666 - SUPERCOMPUTER LAB**

### **Long Course Title**

SUPERCOMPUTER LAB FOR PHYSICAL SCIENCES

### **Course Description**

Hands-on approach to modern HPC technologies, shared and distributed memory modes, GPU computing. Covers three common parallelization frameworks (MPI, pthreads, CUDA) with applications to problems in gas dynamics, transport, and plasma physics.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of B- in at least 1 of the following:
  - SPA662 - COMPUTATIONAL PHYSICS (3)

### **Restrictions**

Graduate Students

## **SPA685 - ANALYSIS OF SPACECRAFT DATA**

### **Long Course Title**

ANALYSIS OF SPACECRAFT DATA

### **Course Description**

This course is to prepare students for observational research using spacecraft data, especially in-situ measurements of particles and fields. Students will first learn to access spacecraft databases and use softwares of their choice. Students will be introduced to common data analysis methods such as distribution function, model fitting, spectral analysis, etc. Examples of real spacecraft data will be shown to illustrate structures in the heliosphere, such as the HCS, ICME and interplanetary shocks. Finally, student will gain experience by working on research projects.

### **Credits**

3

**SPA689 - SELECTED TOPICS****Long Course Title**

SELECTED TOPICS

**Course Description**

Selected Topics in Space Science not covered in other courses.

**Credits**

1 - 3

**SPA699 - MASTER'S THESIS****Credits**

1 - 6

**SPA741 - PHYSICS OF COSMIC RAYS****Course Description**

Covers two principal areas of cosmic ray physics: 1) cosmic ray origin and acceleration, and 2) cosmic ray transport and detection. Includes galactic cosmic rays, anomalous cosmic rays, and solar energetic particles. Transport theory, acceleration mechanisms and observational signatures.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA623 - TRANSPORT PROCESSES IN SPACE (3)

**SPA742 - MULTIMESSENGER ASTROPHYSICS****Long Course Title**

MULTI-MESSENGER ASTROPHYSICS WITH GAMMA-RAY BURSTS

**Course Description**

Multi-messenger astrophysics studies the events in the universe through more than one messenger. The most common of messengers are photons by which most of the observations are done. In recent years observations through new messengers like gravitational waves, neutrinos, or cosmic rays are gaining steam and opening up new ways to view the universe.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of B- in all of the following:
  - SPA622 - CLASSICAL & QUANTUM STATISTICS (3)
  - SPA624 - SPACE PHYSICS I (3)

**SPA771 - COMPETITIVE GRANT WRITING WKSP****Long Course Title**

COMPETITIVE GRANT WRITING WORKSHOP

**Course Description**

This course is designed for senior level graduate students who are about to graduate and start their professional career. It will introduce students to the real and complete process of competing for grant support. It is comprised of a series of lectures (workshops), case studies, and ends with a formal proposal from each participant and a mock review process.

**Credits**

1

**SPA789 - SELECTED TOPICS****Course Description**

Selected Topics in Space Science not covered in other courses.

**Credits**

3

**SPA796 - JOURNAL CLUB****Course Description**

This course requires graduate students to read, interpret and present literature critically to fellow students, researchers, and faculty. Students stay abreast of current knowledge in the field, develop presentation skills and promote department unity. Faculty instructor will lead, assign, and provide students feedback on their presentations.

**Credits**

1

**SPA799 - DOCTORAL DISSERTATION****Long Course Title**

DOCTORAL DISSERTATION

**Course Description**

Students must have passed the Comprehensive Examination at PhD level and have PhD advisor's approval. No more than 9 hours may be taken prior to passing the Qualifying Examination.

**Credits**

0 - 9

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## **Sport & Fitness Management**

**SFM265 - INTRO TO SPORT MGMT****Long Course Title**

INTRODUCTION TO SPORT MANAGEMENT

**Course Description**

This 3 hr course provides the student with knowledge of sport management and administration in both athletics and leisure-based sports. Topics include management concepts, roles and responsibilities, fiscal management, fund raising, legal issues, event scheduling and decision making.

**Credits**

3

**Equivalent Course(s)**

KIN265 - INTRO TO SPORT MGMT

**SFM343 - ST SPORTS & FITNESS MGMT****Long Course Title**

SPECIAL TOPICS IN SPORTS AND FITNESS MANAGEMENT

**Course Description**

This course will address a variety of topics based on emerging trends in Sport Administration. Potential course offerings will include coach education, advanced legal issues, sport sociology, sport finance and accounting and globalization of sport. Course content will be offered in rotation as needed.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)

**SFM374 - ORG ISSUES IN SPORT****Long Course Title**

ORGANIZATIONAL ISSUES IN SPORT

**Course Description**

Using theoretical and practical applications, this course provides students with an understanding of the organizational processes that are fundamental to working in a sport organization. Areas addressed include organizational structure, management, ethics, leadership, planning, diversity, conflict.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SFM265 - INTRO TO SPORT MGMT (3)

## **SFM381 - FACILITIES AND EQUIPMENT MGT**

### **Long Course Title**

FACILITIES AND EQUIPMENT MANAGEMENT

### **Course Description**

This course will provide theories for the design, development, operation, maintenance, and management of sport and fitness facilities.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)

## **SFM382 - SPORT LEADERSHIP**

### **Course Description**

This course focuses on the role of leadership in general, with a specific application to a sport setting. We will focus on the numerous approaches to leadership that have been used, and emphasize illustrating and applying them to different aspects of sports.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)

## **SFM383 - SOCIOLOGY IN SPORT**

### **Course Description**

This course is designed to study the role sport plays as a social institution. Additionally, we will identify what social institutions are most affected by sport and how these institutions are created. Topics will include the definition of sport as well as why and how it is studied, the effect of sport on society, sport as an institution, and sport and culture.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SFM385 - WOMEN IN SPORT****Long Course Title**

WOMEN IN SPORT

**Course Description**

The course examines the effects of Title IX, and other historical events that have influenced the inclusion of women in participating in various aspects of sports and the role of women in sports industry through a contemporary approach to sport leadership, management and media.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of C- in all of the following:
  - SOC100 - INTRO TO SOCIOLOGY (3)

**SFM387 - IMPACT OF TECH IN SPORT****Long Course Title**

IMPACT OF TECHNOLOGY IN SPORT

**Course Description**

This course will focus on the philosophical and sociological issues surrounding sport and physical activity, especially as it relates to advances in technology and examining its significance in the field. The historical evolution of sports science and technology will be discussed as well as an analysis of how technological advancement impacts sporting events, and the participation of sport and physical activity, and sports performance. Current issues and controversies of technology in sports science will also be explored.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SFM265 - INTRO TO SPORT MGMT (3)

**SFM390 - SPORT COMMUNICATION****Course Description**

This class is designed to offer preparation, instruction, and practical applications within the field of communications within sports organizations. Special emphasis will be given to media relations and other skills deemed essential for sport communication professionals in an ever-changing environment.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SFM265 - INTRO TO SPORT MGMT (3)

## **SFM442 - INTRO TO SPORT LAW**

### **Long Course Title**

INTRODUCTION TO SPORT LAW

### **Course Description**

This course is designed to introduce students to the legal doctrines, major statutes, standards, and case law that establish legal responsibilities, rights, privileges and controls related to the field of exercise and sport sciences.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)

## **SFM470 - SPORT MARKETING**

### **Course Description**

Sport Marketing presents an overview of the various techniques and strategies used in meeting the wants and needs of consumers in the sport industry as well as the understanding how sport can be used to assist in the marketing of other companies and products. Areas to be addressed are the uniqueness of sport marketing in comparison with traditional marketing, an overview of the segments of the sport industry, the importance of market research and segmentation in identifying the right sport consumer, the issue of data-based marketing in researching the sport consumer, an overview of the marketing mix as individual units and the relationship between those units, and the development of sponsorship and endorsement packages.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - MKT301 - PRINCIPLES OF MARKETING (3)

## **SFM471 - SPORT FINANCE**

### **Course Description**

This course examines the financial tools that sports managers use to run their sport businesses. As such, it explores traditional and innovative methods of revenue acquisition and financial management in sports organizations, the financial business structure of sports organizations, and the financial planning and forecasting processes that make organizations effective. Various other aspects of finance are discussed as they relate to sports organizations, including the time value of money, capital structuring, stocks and bonds, inventory management, and taxation.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - FIN301 - PRINCIPLES OF FINANCE (3)



## **SFM472 - ETHICS IN SPORT**

### **Course Description**

This course prepares students to take a more critical view of sport, as well as reflect on their own personal ethical and competitive orientations. A central focus of the course is to view sport and competition from social justice and diversity perspectives. More specifically, sport is discussed from a socio-cultural context regarding how dominant and non-dominant groups (racial, ethnic, or socio-economic) have used sport to preserve or change their societal status. This includes such areas as racial identity and equity, gender identity and equity, cultural and ethnic stereotyping, sexual orientation, hazing and bullying, religion and sport, and individuals with disabilities. This course will also look at how to become an agent for change by using social capital to promote ethical equity and diversity.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - KIN265 - INTRO TO SPORT MGMT (3)
  - SFM265 - INTRO TO SPORT MGMT (3)

## **SFM473 - ADV SPORT MGMT**

### **Long Course Title**

ADVANCED SPORT MANAGEMENT

### **Course Description**

This course provides the student with knowledge of sport management and administration in both athletics and leisure-based sports. Topics include management concepts, roles and responsibilities, fiscal management, fundraising, legal issues, event scheduling, and decision-making.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - SFM472 - ETHICS IN SPORT (3)

## **SFM474 - GOV & POL DEV IN SPORT**

### **Long Course Title**

GOVERNMENT AND POLICY DEVELOPMENT IN SPORT

### **Course Description**

This course examines the organizations focused on both professional and amateur governance structures and processes. The course also addresses policy in education, non-profit, professional, and international sports venues.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SFM265 - INTRO TO SPORT MGMT (3)

## **SFM480 - SPORT ANALYTICS**

### **Course Description**

Analytical techniques and quantitative methods are on the rise in many areas of the sport management industry. The purpose of this course will be to establish an understanding of applying analytical and statistical techniques as it relates to the field of sport management. A survey into basic statistical techniques (multiple regression, discriminant analysis, etc.) will be the basis from which this class will work. Students will expand critical thinking, explore current sport analytics issues, summarize data, improve decision making as well as improve presentation skills.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SFM265 - INTRO TO SPORT MGMT (3)

## **SFM481 - SPRT SALES/REV/FUND**

### **Long Course Title**

SPORT SALES, REVENUE, AND FUNDING

### **Course Description**

This course explores various revenue generation in sport. Students will learn foundational sales concepts, including the sales process, the role of corporate partnership in sport, and the application of the sales process as it relates to developing solutions to achieving partner organization objectives. Students will also explore fundraising, specifically in the context of collegiate athletics and community sport, with a focus on cultivation strategies.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - SFM265 - INTRO TO SPORT MGMT (3)

## **SFM484 - EVENT MANAGEMENT**

### **Course Description**

This course investigates event management (in a planning and administration of sports events context) using a secondary objective model for planning, implementation management of events. This management of an event will include aspects such as event planning, event promotion, event sponsorship, recruiting & managing volunteers, event risk management, and event facilitation. The financial elements of sports event management will be.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in at least 1 of the following:
    - KIN265 - INTRO TO SPORT MGMT (3)
    - SFM265 - INTRO TO SPORT MGMT (3)
  - Earn a minimum grade of D- in all of the following:
    - SFM381 - FACILITIES AND EQUIPMENT MGT (3)

## **SFM491 - SPORT & FITNESS MGT INTERNSHIP**

### **Long Course Title**

SPORT AND FITNESS MANAGEMENT INTERNSHIP

### **Course Description**

Sport & Fitness Management Internship will introduce and promote professionalism through a hands-on experience with a local company. The student will be guided by a faculty member and company representative to achieve a strong overall work experience pertaining to the student's interests.

### **Credits**

6

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earn a minimum grade of C- in at least 1 of the following:
    - KIN265 - INTRO TO SPORT MGMT (3)
    - SFM265 - INTRO TO SPORT MGMT (3)

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## **Statistics**

## **ST281 - ELEMENTS OF STAT ANALYSIS**

### **Course Description**

Descriptive statistics, fundamentals of probability theory, fundamentals of statistical inference, including estimation and hypothesis testing, and use of typical statistical package such as MINITAB.

### **Credits**

3

### **Prerequisites**

- Complete 1 of the following
  - Student must have the following placement: Math Level 2 (PLMA 2000)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA115 - PRECALCULUS ALGEBRA & TRIG (4)

### **Equivalent Course(s)**

MA281 - ELEMENTS OF STATISTICAL ANALYSIS

## **ST287 - APPLIED STATISTICS I**

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of C- in at least 1 of the following:
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA115 - PRECALCULUS ALGEBRA & TRIG (4)

## **ST487 - INTRO TO MATH STATISTICS**

### **Course Description**

Brief review of basic probability theory, sampling distributions, estimations, hypothesis testing, experimental design, correlation and regression, analysis of variance, and nonparametric statistics.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - MA201 - CALCULUS III (4)
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)

### **Equivalent Course(s)**

MA487 - INTRO TO MATH STATISTICS

## **ST687 - THEORY OF STATISTICS I**

### **Course Description**

Distribution of statistics based on ordered samples, asymptotic sampling distributions, maximum likelihood, least squares, and other methods of point estimation, Rao-Blackwell theorem and Cramer-Rao inequality, confidence intervals, regions, and their optimal properties. Neyman-Pearson formulation and tests of simple hypothesis against simple alternatives.

### **Credits**

3

## **ST787 - THEORY OF STATISTICS II**

### **Course Description**

Continuation of hypothesis testing, likelihood ratio and unbiased tests, uniformly most powerful tests, power function, nonparametric tests, statistical decision theory, distribution and linear models.

### **Credits**

3

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# **Theatre**

## **TH100 - STAGECRAFT**

### **Course Description**

This course will provide students with the basic knowledge of stage construction, its practices, and implementation. Additional hands-on experience will be gained by working outside of class hours in the scene shop assisting in the construction and installation of main-stage productions.

### **Credits**

3

**TH101 - THEATRE PRACTICUM****Long Course Title**

THEATRE PRACTICUM

**Credits**

1

**TH110 - VOICE AND DICTION****Course Description**

Examines and practices methods of adjusting vocal articulation, tone, pitch, pace, volume, resonance, and pronunciation for improving or changing voice quality and accents. Understanding the vocal instrument prepares students for acting and for positive self-presentation in the real world.

**Credits**

3

**TH115 - INTRO STAGE MOVEMENT****Long Course Title**

INTRODUCTION TO STAGE MOVEMENT

**Course Description**

This course explores the movement skills necessary for the actor with emphasis on physical training and practical application in realistic and abstract performance efforts.

**Credits**

3

**TH122 - THEATRE APPRECIATION****Course Description**

Introductory survey of theater art focusing on understanding performance components and genres. Satisfies fine arts elective. Offered every term.

**Credits**

3

**Charger Foundations**

Area II: Fine Art

**TH123 - INTRO TO FILM STUDIES****Long Course Title**

INTRO TO FILM STUDIES

**Course Description**

Students develop a critical understanding of how the 'language' of film uses image and sound to produce meaning and pleasure, and to elicit audience response in order to generate what constitutes meaning. Concentrating on film form and style, the course teaches students to engage cinema in relation to narrative, mise-en-scene, cinematography, editing, sound, and genre.

**Credits**

3

**Equivalent Course(s)**

FMA123 - INTRO TO FILM STUDIES

**Charger Foundations**

Area II: Fine Art

**TH150 - SCRIPT ANALYSIS****Course Description**

This course is a hands-on look into script analysis, using plays from the western theatre canon, some of which will be produced by UAH Theatre during the school year. There will be individual and group work in script analysis, culminating in a full script analysis project at the end of the semester.

**Credits**

3

**TH155 - SURVEY MUSICAL THEATRE****Long Course Title**

SURVEY MUSICAL THEATRE

**Course Description**

This class will enrich the student's experience of and knowledge about musical theatre. By understanding musicals as products of specific cultural values and historical contexts, the student will become more sensitive to their meanings and how to interpret and perform them.

**Credits**

3

**TH180 - READER'S THEATRE****Long Course Title**

READER'S THEATRE

**Course Description**

This course is designed to explore play text within the theatre. Students will work first hand with plays and present staged readings. This course is open to all majors.

**Credits**

3

**TH200 - PLAYWRITING****Long Course Title**

PLAYWRITING

**Course Description**

Students will create original short, theatrical works as they examine and experiment with multiple narrative techniques. Students will work independently and collaboratively to experience the full process of drafting, hearing the words aloud, and revising original works. Works will be read aloud; student and faculty feedback will be given.

**Credits**

3

**TH201 - THEATRE PRACTICUM****Course Description**

UAH Theatre offers students a number of opportunities to work on and crew productions. Practicum allows students to earn required class credit while engaged in these activities.

**Credits**

1

**TH221 - ACTING****Course Description**

This course explores the foundations of acting through an understanding of basic techniques including scene study, script analysis, improvisation, and physical and vocal work. Offered every semester.

**Credits**

3

**TH225 - ELEMENTS OF THEATRE PRODUCTION****Course Description**

This course is designed to give students the opportunity to explore the design components of theatre including scenery, costumes, lighting and sound through class projects and practical application. Offered every Spring.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH122 - THEATRE APPRECIATION (3)

**TH250 - STAGE MAKEUP****Course Description**

Course will cover basic stage makeup application techniques for both the actor and the makeup artist. Course will also explore 3D makeup techniques and character analysis for makeup design. Theatre Majors only, or permission of instructor.

**Credits**

3

**Prerequisites**

- Admitted to: BA THTR

**TH251 - COSTUME FUNDAMENTALS****Course Description**

The purpose of this course is to learn how to function in the costume shop. Students will learn basic hand and machine sewing skills for constructing and completing a costume. Students will also gain an understanding of basic pattern making skills and how costumes are created for Theatre.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)

**TH260 - VIDEO PRODUCTION****Course Description**

This course provides students with an opportunity to experience the process of video production through creative projects designed to stimulate the visual artist, summon the storyteller and create the video editor.

**Credits**

3

**Equivalent Course(s)**

FMA260 - VIDEO PRODUCTION

**TH301 - THEATRE PRACTICUM****Course Description**

UAH Theatre offers students a number of opportunities to work on and crew productions. Practicum allows students to earn required class credit while engaged in these activities.

**Credits**

1



**TH321 - ACTING II**  
**Course Description**

Acting II is a Stanislavsky-based class which will further the growth of skills learned in Acting I, as it applies to more complex characterization. Class work will include sensory exercises, relaxation, concentration, imagination, improvisation, character analysis, and scene work.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH221 - ACTING (3)

**TH322 - THEATRE HISTORY I**  
**Course Description**

Explores the development of theater art from its origins to French neoclassicism and Moliere with particular emphasis on the Greeks, Shakespeare, and his contemporaries. Offered every two years.

**Credits**

3

**TH323 - THEATRE HISTORY II**  
**Course Description**

Explores the development of theatre art from the 17th to the 20th century, with particular emphasis on the English Restoration, early Realism and the American masters. Offered every two years.

**Credits**

3

**TH324 - MODERN AMERICAN THEATRE**  
**Course Description**

This course is a seminar-style study of current American theatre and plays written in the 21st century. To that end, we will read and write about 8 current American plays, and other articles from theatre journals. At the end of the class, students will understand and be able to explicate in writing, spoken presentation, and/or through creative activity, the present, and possible future impacts of current American theatre on American society.

**Credits**

3

**TH325 - COMIC BOOK THEATRE**  
**Long Course Title**

COMIC BOOK AND CONTEMPORARY THEATRE

**Course Description**

"Boom! Kapow! Bravo! The Comic Book and Contemporary Theatre" takes a deep dive into current theatre performance and how playwrights are transforming comic books and other popular genre art into theatre that engages and surprises audiences.

**Credits**

3

### **TH330 - STAGE MANAGEMENT**

#### **Course Description**

This course concerns the role of the Stage Manager in theatrical productions. It focuses on the stage manager's duties, responsibilities, and procedures from pre-production to post-production. It explores the functions of various members of the production team and how the stage manager's interaction with each member of this team varies. It considers the role of the stage manager as the hub of communication for a production.

#### **Credits**

3

#### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH122 - THEATRE APPRECIATION (3)
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)

### **TH334 - HISTORY OF AMERICAN CINEMA**

#### **Course Description**

Investigates the American cinema as a cultural artifact by studying cultural and historical context of representations, audiences, aesthetics and industry practices in American cinema from its beginning (1895) to present.

#### **Credits**

3

#### **Equivalent Course(s)**

FMA334 - HISTORY OF AMERICAN CINEMA

### **TH340 - SPECIAL TOPICS IN THEATRE**

#### **Course Description**

Topics announced in advance. Representative topics include playwriting, directing, and ancient Greek theatre. May be repeated twice for credit.

#### **Credits**

3

### **TH355 - SCENE DESIGN**

#### **Course Description**

This class introduces students to the many facets, both artistic and engineering-based, of scene design for the theatre including: history, research, design, stage, direction, technical direction, scenic art and props.

#### **Credits**

3

#### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH100 - STAGECRAFT (3)
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)

**TH365 - COSTUME DESIGN****Long Course Title**

COSTUME DESIGN

**Course Description**

The purpose of this course is to learn the intricacies of costume design and how it fits in the full vision of a Theatrical Production. The importance of the artist's vision and the practical use must all be addressed when designing a show. Each student will learn to develop their own style and voice as an artist and how to work in the theatre.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)

**TH375 - SOUND DESIGN****Course Description**

This course offers an exploration of the sound design process for the theatre. Script analysis and creating a design concept will underline the structure of the course. The students will have the opportunity to use a DAW (digital audio workstation) and various computer software programs including QLab. The course includes an overview of digital audio data structures, "plug-ins", processing, equalization and standard solutions for interfacing external devices with a computer. The students will participate in two productions and gain valuable hands-on experience. There will be an emphasis on the creative possibilities of sound design for the theatre and multimedia.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)

**TH390 - TEACHING THEATRE****Course Description**

This course is designed to help students develop the skills required to coach and direct student actors, focusing on best practices in teaching the fundamentals of directing, including various assessment rubrics and adapting activities to different age groups. The course emphasizes learning by doing.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH221 - ACTING (3)

## **TH400 - INTERNSHIP IN THEATRE**

### **Course Description**

Practical experience in the workplace allows the student to apply principles, theories, and skills learned in Theatre Program courses. Arranged by the student with consent of the director of the Theatre Program, the student meets regularly with a faculty advisor, keeps a log of activities, and submits a report on the internship.

### **Credits**

0.5 - 3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Admitted to: BA THTR

## **TH421 - ACTING III**

### **Course Description**

This class explores non-realist acting techniques, as a way to expand understanding of different performance and period styles. Students will work in historical periods from the Italian and Elizabethan renaissances and more contemporary styles.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - TH321 - ACTING II (3)

## **TH425 - THEATRE MAINSTAGE**

### **Long Course Title**

THEATRE MAINSTAGE

### **Course Description**

This course provides students with an opportunity to experience the complete process of theatre including such elements as: direction, acting, design, tech and management. The class will produce two full length plays. Students will be auditioned to determine roles in each production. Some will serve critical production roles such as design, direction, and management while others will act in one or both productions. In certain instances, a student actor may appear in both plays. Offered every semester. Can be taken two semesters for maximum credit of 6 hours. Non Theatre majors must have approval from Director of Theatre.

### **Credits**

1 - 3

### **Prerequisites**

- Instructor permission required

## **TH431 - SENIOR CAPSTONE THEATRE**

### **Course Description**

Senior capstone course involving either a scholarly project or an approved communication-intensive internship combined with a comprehensive examination.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Admitted to: BA THTR

## **TH465 - DIRECTING**

### **Course Description**

In this course, students will develop their skills in theatrical directing and production using script analysis, visual composition, design, and communication. Students will complete hands-on directing scene projects, supplemented with written analysis, dramaturgical research, and design images.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Complete 1 of the following
    - Must have a class standing of Junior
    - Must have a class standing of Senior
  - Earn a minimum grade of D- in all of the following:
    - TH150 - SCRIPT ANALYSIS (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - TH322 - THEATRE HISTORY I (3)
    - TH323 - THEATRE HISTORY II (3)

## **TH475 - PORTFOLIO**

### **Course Description**

This course explores the current state of the entertainment industry's job market. Students from design, performance, video production, and dramaturgy build and refine the materials they will need to be employed within the entertainment industry.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Complete 1 of the following
    - Must have a class standing of Junior
    - Must have a class standing of Senior
  - Complete 1 of the following
    - Earn a minimum grade of D- in at least 1 of the following:
      - TH355 - SCENE DESIGN (3)
      - TH390 - TEACHING THEATRE (3)
      - TH421 - ACTING III (3)
    - Earn a minimum grade of D- in all of the following:
      - TH322 - THEATRE HISTORY I (3)
      - TH323 - THEATRE HISTORY II (3)

## **TH480 - DRAMATURGY**

### **Course Description**

Study of the fundamental skills and practical collaborative processes needed to dramaturg a work of theater.

### **Credits**

3

### **Prerequisites**

- Complete all of the following
  - Earn a minimum grade of D- in all of the following:
    - TH150 - SCRIPT ANALYSIS (3)
  - Earn a minimum grade of D- in at least 1 of the following:
    - TH322 - THEATRE HISTORY I (3)
    - TH323 - THEATRE HISTORY II (3)

## **TH499 - INDEPENDENT STUDY**

### **Long Course Title**

THEATRE INDEPENDENT STUDY

### **Course Description**

Theatre Independent Study gives students the opportunity to pursue special research and creative projects with guidance from theatre faculty. Syllabus to be developed by each student and their faculty mentor. Class may be taken twice for college credit.

### **Credits**

1 - 3

### **Restrictions**

Instructor Permission Required

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## University Life

### **UNV101 - INTRO TO UNIVERSITY LIFE**

#### **Course Description**

Introduction to University Life is a course designed to facilitate the successful transition of new students into the UAH community. This one credit hour elective course will assist students in the development of academic and personal skills that contribute to success in college, the workplace, and lifelong learning. The education strategy for the course includes cooperative learning, guided discovery activities, journal writing and various assessment measures.

#### **Credits**

1

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## Women's/Gender/Sexuality Studies

### **WGS200 - INTRO WOMENS/GENDER/SEXLTU STU**

#### **Long Course Title**

INTRODUCTION TO WOMEN'S, GENDER, AND SEXUALITY STUDIES

#### **Course Description**

Focusing on gender and sexuality as fundamental categories of meaning, the course will introduce methods and approaches to Women's, Gender, and Sexuality Studies in a variety of disciplines. It will examine the pervasive and often unacknowledged ways that gender and sexuality change our social institutions, individual knowledge, and interpersonal relationships. The course includes guest lectures by many of our faculty teaching courses in the Women's Gender, and Sexuality Studies minor.

#### **Credits**

3

#### **Charger Foundations**

Area II: Humanities

### **WGS340 - SPECIAL TOPICS**

#### **Long Course Title**

SPECIAL TOPICS IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

#### **Course Description**

Pre-announced special areas addressed in seminar format, laboratory work, or practicum. May be taken twice for credit.

#### **Credits**

1 - 3

#### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)

## **WGS499 - INDEPENDENT STUDY**

### **Long Course Title**

INDEPENDENT STUDY IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

### **Credits**

1 - 3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)

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## **World Languages and Cultures**

### **WLC101A - INTRO FOREIGN LANG I: ARABIC**

#### **Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Fall.

#### **Credits**

3

#### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

#### **Charger Foundations**

Area II: Humanities

### **WLC101F - INTRO FOREIGN LANG I:FRENCH**

#### **Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Fall.

#### **Credits**

3

#### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

#### **Charger Foundations**

Area II: Humanities



**WLC101G - INTRO FOREIGN LANG I:GERMAN****Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Fall.

**Credits**

3

**Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC101J - INTRO FOREIGN LANG I:JAPANESE****Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Fall.

**Credits**

3

**Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC101MS - INTRO TO MEDICAL SPANISH****Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts with special emphasis on medical terminology and tasks. Conducted in the target language.

**Credits**

3

**Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

## **WLC101R - INTRO FOREIGN LANG I:RUSSIAN**

### **Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Fall.

### **Credits**

3

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC101S - INTRO FOREIGN LANG I: SPANISH**

### **Course Description**

Teaches beginning listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Fall.

### **Credits**

3

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC102A - INTRO FOREIGN LANG II: ARABIC**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts. Conducted in the target language.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC102F - INTRO FOREIGN LANG II:FRENCH**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC102G - INTRO FOREIGN LANG II:GERMAN**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC102J - INTRO FOREIGN LANG II:JAPANESE**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC102MS - INTRO TO MEDICAL SPANISH II**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts with special emphasis on medical terminology and tasks. Conducted in the target language.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101MS - INTRO TO MEDICAL SPANISH (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

## **WLC102R - INTRO FOREIGN LANG II:RUSSIAN**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC102S - INTRO FOREIGN LANG II:SPANISH**

### **Course Description**

Teaches beginning listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

### **Restrictions**

Native speakers and other advanced speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC199F - SPECIAL TOPICS**

### **Course Description**

Study of special topics in foreign language, literature, or culture on campus or abroad.

### **Credits**

3

## **WLC199G - SPECIAL TOPICS**

### **Course Description**

Study of special topics in foreign language, literature, or culture on campus or abroad.

### **Credits**

3

**WLC199R - SPECIAL TOPICS****Course Description**

Study of special topics in foreign language, literature, or culture on campus or abroad.

**Credits**

3

**WLC199S - SPECIAL TOPICS****Course Description**

Study of special topics in foreign language, literature, or culture on campus or abroad.

**Credits**

3

**WLC201A - INTERM FOREIGN LANG I: ARABIC****Course Description**

Teaches intermediate listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Fall.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC201F - INTERM FOREIGN LANG:FRENCH****Course Description**

Teaches intermediate listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Fall.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC201G - INTERM FOREIGN LANG:GERMAN****Course Description**

Teaches intermediate listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Fall.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

## **WLC201J - INTERM FOREIGN LANG: JAPANESE**

### **Course Description**

Teaches intermediate listening, speaking, reading, and writing within cultural contexts. Conducted in the target language.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)

### **Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC201R - INTERM FOREIGN LANG:RUSSIAN**

### **Course Description**

Teaches intermediate listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Fall.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)

### **Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities



**WLC201S - INTERM FOREIGN LANG:SPANISH****Course Description**

Teaches intermediate listening, speaking, reading, and writing within cultural contexts. Conducted in the target language. Offered Fall.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC202A - INTERM FOREIGN LANG II: ARABIC****Course Description**

Teaches listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Spring.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC202F - INTERM FOREIGN LANG II:FRENCH****Course Description**

Teaches listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Spring.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC201F - INTERM FOREIGN LANG:FRENCH (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

**WLC202G - INTERM FOREIGN LANG II:GERMAN****Course Description**

Teaches listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Spring.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC201G - INTERM FOREIGN LANG:GERMAN (3)

**Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

**Charger Foundations**

Area II: Humanities

## **WLC202J - INTERM FORGN LANG II:JAPANESE**

### **Course Description**

Teaches listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)

### **Restrictions**

Native speakers of the language may not take this course for credit. Contact department for language placement.

### **Charger Foundations**

Area II: Humanities

## **WLC202R - INTERM FOREIGN LANG II:RUSSIAN**

### **Course Description**

Teaches listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)

### **Charger Foundations**

Area II: Humanities

## **WLC202S - INTERM FOREIGN LANG II:SPANISH**

### **Course Description**

Teaches listening, speaking, reading and writing within cultural contexts. Conducted in the target language. Offered Spring.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC201S - INTERM FOREIGN LANG:SPANISH (3)

### **Charger Foundations**

Area II: Humanities

## **WLC204 - INTERNATIONAL CINEMA**

### **Course Description**

Analyzes foreign language films centered on changing themes, such as family, religion, children, society, and the arts. Conducted in English.

### **Credits**

3

### **Charger Foundations**

Area II: Humanities

## **WLC301A - CONVERSATION: ARABIC**

### **Course Description**

Teaches conversational communication through cultural texts and media. Conducted in the target language.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)

## **WLC301F - CONVERSATION:FRENCH**

### **Course Description**

Teaches conversational communication through cultural texts and media. Conducted in the target language. Offered Spring or on demand.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

## **WLC301G - CONVERSATION:GERMAN**

### **Long Course Title**

CONVERSATION: GERMAN

### **Course Description**

Teaches conversational communication through cultural texts and media. Conducted in the target language. Offered Spring or on demand.

### **Credits**

3

### **Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)

**WLC301J - CONVERSATION:JAPANESE****Long Course Title**

CONVERSATION: JAPANESE

**Course Description**

Teaches conversational communication through cultural texts and media. Conducted in the target language. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202J - INTERM FORGN LANG II:JAPANESE (3)

**WLC301R - CONVERSATION:RUSSIAN****Long Course Title**

CONVERSATION: RUSSIAN

**Course Description**

Teaches conversational communication through cultural texts and media. Conducted in the target language. Offered Spring or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)

**WLC301S - CONVERSATION:SPANISH****Long Course Title**

CONVERSATION: SPANISH

**Course Description**

Teaches conversational communication through cultural texts and media. Conducted in the target language. Offered Spring or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

**WLC302F - COMPOSITION:FRENCH****Long Course Title**

COMPOSITION: FRENCH

**Course Description**

Teaches writing skills through cultural texts and media. Conducted in the target language. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

**WLC302G - COMPOSITION:GERMAN****Long Course Title**

COMPOSITION: GERMAN

**Course Description**

Teaches writing skills through cultural texts and media. Conducted in the target language. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)

**WLC302R - COMPOSITION:RUSSIAN****Long Course Title**

COMPOSITION: RUSSIAN

**Course Description**

Teaches writing skills through cultural texts and media. Conducted in the target language. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)

**WLC302S - COMPOSITION:SPANISH****Long Course Title**

COMPOSITION: SPANISH

**Course Description**

Teaches writing skills through cultural texts and media. Conducted in the target language. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

**WLC303F - FOREIGN LANG LIFE & PROF:FRENC****Long Course Title**

FOREIGN LANG FOR LIFE & PROFESSIONS:FRENCH

**Course Description**

Teaches foreign language skills for careers in business, technology, politics, etc. Conducted in the target language. Offered Spring or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

**WLC303G - FOREIGN LANG LIFE & PROF:GERMA****Long Course Title**

FOREIGN LANG FOR LIFE & PROFESSIONS:GERMAN

**Course Description**

Teaches foreign language skills for careers in business, technology, politics, etc. Conducted in the target language. Offered Spring or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)

**WLC303R - FOREIGN LANG LIFE & PROF:RUSSI****Long Course Title**

FOREIGN LANG FOR LIFE & PROFESSIONS:RUSSIAN

**Course Description**

Teaches foreign language skills for careers in business, technology, politics, etc. Conducted in the target language. Offered Spring or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)

**WLC303S - FOREIGN LANG LIFE & PROF:SPANI****Long Course Title**

FOREIGN LANG FOR LIFE & PROFESSIONS:SPANISH

**Course Description**

Teaches foreign language skills for careers in business, technology, politics, etc. Conducted in the target language. Offered Spring or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

**WLC304F - CULTURE:FRENCH****Course Description**

Teaches the arts, histories, social customs, and values of the target culture. Conducted in the target language. Offered Fall or on Demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301F - CONVERSATION:FRENCH (3)
  - WLC302F - COMPOSITION:FRENCH (3)



**WLC304G - CULTURE:GERMAN****Long Course Title**

CULTURE: GERMAN

**Course Description**

Teaches the arts, histories, social customs, and values of the target culture. Conducted in the target language. Offered Fall or on Demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301G - CONVERSATION:GERMAN (3)
  - WLC302G - COMPOSITION:GERMAN (3)

**WLC304R - CULTURE:RUSSIAN****Long Course Title**

CULTURE: RUSSIAN

**Course Description**

Teaches the arts, histories, social customs, and values of the target culture. Conducted in the target language. Offered Fall or on Demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301R - CONVERSATION:RUSSIAN (3)
  - WLC302R - COMPOSITION:RUSSIAN (3)

**WLC304S - CULTURE:SPANISH****Long Course Title**

CULTURE: SPANISH

**Course Description**

Teaches the arts, histories, social customs, and values of the target culture. Conducted in the target language. Offered Fall or on Demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301S - CONVERSATION:SPANISH (3)
  - WLC302S - COMPOSITION:SPANISH (3)

**WLC305F - INTRO TO LITERATURE:FRENCH****Long Course Title**

INTRO TO LITERATURE: FRENCH

**Course Description**

Introduces the literature of the target language in cultural contexts. Conducted in the target language.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301F - CONVERSATION:FRENCH (3)
  - WLC302F - COMPOSITION:FRENCH (3)

**WLC305G - INTRO TO LITERATURE:GERMAN****Long Course Title**

INTRO TO LITERATURE: GERMAN

**Course Description**

Introduces the literature of the target language in cultural contexts. Conducted in the target language.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301G - CONVERSATION:GERMAN (3)
  - WLC302G - COMPOSITION:GERMAN (3)

**WLC305R - INTRO TO LITERATURE:RUSSIAN****Course Description**

Introduces the literature of the target language in cultural contexts. Conducted in the target language.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301R - CONVERSATION:RUSSIAN (3)
  - WLC302R - COMPOSITION:RUSSIAN (3)

**WLC305S - INTRO TO LITERATURE:SPANISH****Course Description**

Introduces the literature of the target language in cultural contexts. Conducted in the target language.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301S - CONVERSATION:SPANISH (3)
  - WLC302S - COMPOSITION:SPANISH (3)

**WLC404F - TEXTS & CONTEXTS:SEM LIT:FRENC****Long Course Title**

TEXTS & CONTEXTS:SEM LIT:FRENCH

**Course Description**

In-depth study of authors, genres, or movements in cultural contexts. Conducted in the target language. May be repeated when taught with a different topic. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301F - CONVERSATION:FRENCH (3)
  - WLC302F - COMPOSITION:FRENCH (3)

**WLC404G - TEXTS & CONTEXTS:SEM LIT/GERMA****Long Course Title**

TEXTS & CONTEXTS:SEM LIT:GERMAN

**Course Description**

In-depth study of authors, genres, or movements in cultural contexts. Conducted in the target language. May be repeated when taught with a different topic. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301G - CONVERSATION:GERMAN (3)
  - WLC302G - COMPOSITION:GERMAN (3)

**WLC404R - TEXTS & CONTEXTS:SEM LIT:RUSSI****Long Course Title**

TEXTS & CONTEXTS:SEM LIT:RUSSIAN

**Course Description**

In-depth study of authors, genres, or movements in cultural contexts. Conducted in the target language. May be repeated when taught with a different topic.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301R - CONVERSATION:RUSSIAN (3)
  - WLC302R - COMPOSITION:RUSSIAN (3)

**WLC404S - TEXTS & CONTEXTS:SEM LIT:SPANI****Long Course Title**

TEXTS & CONTEXTS:SEM LIT:SPANISH

**Course Description**

In-depth study of authors, genres, or movements in cultural contexts. Conducted in the target language. May be repeated when taught with a different topic. Offered Fall or on demand.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC301S - CONVERSATION:SPANISH (3)
  - WLC302S - COMPOSITION:SPANISH (3)

**WLC409 - SR SEM: COMPARATIVE LANG & CUL****Long Course Title**

SENIOR SEMINAR: COMPARATIVE LANGUAGES & CULTURES

**Course Description**

The senior seminar will explore a special topic relevant to all world languages and cultures; examples include but are not limited to education, family, fine arts, music, food, and politics. Students will compare their own language and culture to other languages and cultures, develop connections to other languages and disciplines, and cultivate an understanding of and appreciation for world cultures and communities with the aim of understanding that there are multiple ways of viewing the world. This is the capstone course for majors who opt out of completing an international internship (WLC 410).

**Credits**

3

**Prerequisites**

- Complete all of the following
  - Must have a class standing of Senior
  - Earned at least 6 hours from:  
  
Must earn minimum grade of D- in any selected course  
Courses from WLC 301-305

**WLC410 - INT'L INTERN:COMP LANG/CULT****Long Course Title**

INTERNATIONAL INTERNSHIP:COMPARATIVE LANGUAGES & CULTURES

**Course Description**

Capstone for majors, offering practical experience in commercial or public organizations domestically or abroad. Conducted in English. Offered Spring, Summer, and Fall.

**Credits**

3 - 6

**Prerequisites**

- Earn a minimum grade of D- in at least 1 of the following:
  - WLC303F - FOREIGN LANG LIFE & PROF:FRENC (3)
  - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
  - WLC303R - FOREIGN LANG LIFE & PROF:RUSSI (3)
  - WLC303S - FOREIGN LANG LIFE & PROF:SPANI (3)

**WLC499F - INDEPENDENT STUDY:FRENCH****Long Course Title**

INDEPENDENT STUDY:FRENCH

**Course Description**

Independent study and/or study abroad.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

**WLC499G - INDEPENDENT STUDY:GERMAN****Long Course Title**

INDEPENDENT STUDY:GERMAN

**Course Description**

Independent study and/or study abroad.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)

**WLC499R - INDEPENDENT STUDY:RUSSIAN****Long Course Title**

INDEPENDENT STUDY:RUSSIAN

**Course Description**

Independent study and/or study abroad.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)

**WLC499S - INDEPENDENT STUDY:SPANISH****Long Course Title**

INDEPENDENT STUDY:SPANISH

**Course Description**

Independent study and/or study abroad.

**Credits**

3

**Prerequisites**

- Earn a minimum grade of D- in all of the following:
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
-

# Programs

## College of Arts, Humanities, and Social Sciences

### Ancient and Medieval Studies (Minor)

#### Program Description

The minor in Ancient and Medieval Studies allows students to appreciate ancient and medieval civilizations both as accomplishments worthy of study in their own right and for a better understanding of the modern world. This program provides an interdisciplinary framework for exploring topics that range from history of ideas and institutions to that of material culture and archaeology, literature, philosophy and languages.

#### Number of Credit Hours

21

#### Minor Requirements

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
    - Additional 18 hours
  - Complete all of the following
    - 18 hours from:
      - ARH401 - ANCIENT GREEK ART (3)
      - ARH402 - MEDIEVAL ART (3)
      - ARH403 - RENAISSANCE ART (3)
      - ARH405 - ANCIENT ROMAN ART (3)
      - CM408 - CLASSICAL RHET THEORY (3)
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH242 - MYTHOLOGY (3)
      - EH448 - THE BIBLE AS LITERATURE (3)
      - EH450 - CHAUCER (3)
      - EH451 - ARTHURIAN ROMANCE (3)
      - HY311 - HISTORIC ARCHAEOLOGY (3)
      - HY329 - IMPERIAL ROME (3)
      - HY331 - WORLD OF MIDDLE AGES (3)
      - HY384 - ISLAMIC WORLD TO 1800 (3)
      - HY401 - DAILY LIFE IN ANCIENT ROME (3)
      - HY480 - ROMANS&BARBARIANS LATE ANTIQTY (3)
      - HY498 - STUDIES IN HISTORY (1 - 3)
      - PSC330 - CLASSI POLITI PHILOSOPHY (3)
      - PHL301 - ANCIENT PHILOSOPHY (3)
      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - 12 of these hours must be at the 300-level or above.

Grand Total Credits: **18**

### Art (BA)

## **Program Description**

The BA in Art prepares students for the important role that artistic and intellectual pursuits play in their lives and throughout our culture. It is accredited by the National Association of Schools of Art and Design (NASAD) and provides an inclusive learning environment where creative expression, critical thinking, and collaboration are fundamental. The program embraces exploration and innovation, traditional and new technologies, and the complex history of art and design. The faculty of the program value the diverse community of artists and scholars necessary to solve problems within an increasingly complex visual culture. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art>.

## **Number of Credit Hours**

120

## **Degree Requirements**

Degree Requirements

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- Complete all of the following
  - BA Degree Requirements (CAHS)
    - Complete all of the following
      - 30% of total degree requirements must be taken at 300 level or higher
      - Must have a 2.0 GPA in major, minor, and overall
      - No more than 6 credit hours of HPE may count in degree requirements
      - 12 of the last 18 credit hours must be taken at UAH
      - 25% of the major, minor, and overall coursework must be taken at UAH
      - No more than 50% of total degree requirement credit hours can come from a two-year school
  - Art majors transferring to UAH must complete at least 12 semester hours of art courses at the 300-level or above at UAH

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II



- Complete all of the following
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Non-Literature

    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)

- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)

- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)

- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Art (BA) - Art Education, 5 Years (Concentration)**

### **Description**

The BA in Art with a concentration in Art Education prepares graduates to license as P-12 art teachers. Students in the program develop a range of visual art skills as well as a deep understanding of pedagogy - the art and science of teaching. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/art-education>.

### **Concentration Requirements**

Area V (Pre-Professional) Requirements

#### 4 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Concentration Requirements

##### 54 Total Credits

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##### Art Education Requirements

- Complete all of the following
  - 18 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS140 - 3D DESIGN (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from any ARH 300 - 400 level course(s)
- Lower Level Requirements
  - 12 hours from:
    - ARS270 - PAINTING: INTRODUCTION (3)
    - ARS220 - ANIMATION: INTRODUCTION (3)
    - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
    - ARS240 - SCULPTURE: INTRODUCTION (3)

- ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
- ARS260 - DRAWING II (3)
- ARS270 - PAINTING: INTRODUCTION (3)
- ARS280 - PRINTMAKING: INTRODUCTION (3)

#### Upper Level Requirements

- Complete 4 of the following
  - 3 hours from:
    - ARS311 - GAME DESIGN: SCRIPTING & DES I (3)
  - 3 hours from:
    - ARS321 - ANIMATION: ORGANIC MODELING (3)
    - ARS322 - ANIMATION: 3D ANIMATION (3)
    - ARS324 - ANIMATION: TECHNICAL ARTS (3)
    - ARS325 - ANIMATION: HARD SURF MODELING (3)
    - ARS327 - ANIMATION: VISUAL STORY DEV (3)
    - ARS328 - ANIMATION: CONCEPT ART (3)
    - ARS329 - ANIMATION: 2D ANIMATION (3)
  - 3 hours from:
    - ARS330 - GRAPHIC DESIGN: PRINT MEDIA I (3)
    - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
    - ARS333 - GRAPH DES: WATERCOLOR & DIG I (3)
    - ARS334 - GRAPH DES: WEB USER EXPER I (3)
    - ARS335 - GRAPHIC DESIGN: TYPOGRAPHY I (3)
  - 3 hours from:
    - ARS340 - SCULP: FABRICATION I (3)
    - ARS341 - SCULP: CARVING I (3)
    - ARS342 - SCULP: CASTING I (3)
    - Course Not Found
    - ARS347 - SPACE AND PLACE (3)
    - ARS348 - DIGITAL FABRICATION (3)
  - 3 hours from:
    - ARS350 - PHOTO: DIGITAL I (3)
    - ARS352 - PHOTO: DARKROOM I (3)
    - ARS353 - PHOTO; DRKRM, HIST & EXPER I (3)
    - ARS355 - PHOTO: DOCUMENTARY I (3)
  - 3 hours from:
    - ARS360 - DRAWING: FIGURE (3)
  - 3 hours from:
    - ARS375 - PAINTING: FIGURE I (3)
    - ARS376 - PAINTING: CONTEMPORARY I (3)
    - ARS377 - PAINTING: MIXED MEDIA I (3)
  - 3 hours from:
    - ARS381 - PRINT: ETCHING & RELIEF I (3)
    - ARS383 - PRINT: SCREENPRINT I (3)
    - ARS385 - PRINT: BOOK ARTS I (3)
    - ARS387 - PRINT: MONOPRNT & LITHOGPHY I (3)

#### Electives

- 6 hours from any ARS 300 - 400 level course(s)
- Capstone
- 3 hours from:
  - ARS496 - PRINCIPLES FOR TEACHING ART (3)

#### Education Requirements

36 Total Credits

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- Complete all of the following
  - 21 hours from:
    - ED301 - INTRO TO EDUCATION PRACTICUM (0)

- ED307 - MULTICULTURAL FND EDUCATION (3)
- ED308 - EDUCATIONAL PSYCHOLOGY (3)
- ED309 - CLASSROOM & BEHAVIOR MGMT (3)
- ED350 - TECHNOLOGY IN CLASSROOM (3)
- EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
- EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
- ED408 - TCHG READING/CONTENT AREA (3)
- 3 hours from:
  - ED315 - EDUC EVALUATION & MEASUREMENT (3)
  - ED410 - FOUNDATIONS EDUC EVALUAT (3)
- 12 hours from:
  - ED499 - P-12 INTERNSHIP (12)

Grand Total Credits: **94**

## **Art (BA) - Art History (Concentration)**

### **Description**

The BA in Art with a concentration in Art History involves the study of cultures all over the globe. Visiting archaeologists come to classes to discuss everything from Buddhist cave art in Tibet to Roman sculpture. Students choose fascinating research topics such as the transformation of dragon imagery in the medieval period, revolutions and the birth of modernism, and the rise and fall of the hipster in contemporary art. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/art-history>.

### **Concentration Requirements**

Area V (Pre-Professional) Requirements

3 Total Credits

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- Complete all of the following
  - hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)

- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

## Concentration Requirements

42 Total Credits

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- Complete all of the following
  - Lower Division Requirements
    - Complete all of the following
      - 9 hours from:
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
      - 6 hours from any ARS 100 - level course(s)
      - 3 hours from any ARS 200 - level course(s)
  - Upper Division Requirements
    - Complete all of the following
      - Art History Courses
        - 3 hours from:
          - ARH309 - CONTEMPORARY ART HISTORY (3)
      - Art History Electives
        - 15 hours from:
          - ARH401 - ANCIENT GREEK ART (3)
          - ARH402 - MEDIEVAL ART (3)
          - ARH403 - RENAISSANCE ART (3)
          - ARH404 - EARLY 20TH-CENTURY MODERNISM (3)
          - ARH405 - ANCIENT ROMAN ART (3)
          - ARH306 - COLLAPSE OF CIVILIZATIONS (3)
          - ARH407 - IMPRESSIONISM & POST-IMP (3)
          - ARH410 - NINETEENTH CENTURY ART (3)
          - ARH311 - PHILOSOPHY OF ART (3)
          - ARH320 - SPECIAL TOPICS IN ART HY (3)
          - ARH395 - INDEPENDENT STUDY (3)
          - HY310 - INTRODUCTION TO PUBLIC HISTORY (3)
    - Senior Thesis
      - 3 hours from:
        - ARH400 - SENIOR THESIS (3)
    - Art Studio Electives
      - Complete all of the following
        - 3 hours from any ARS 300 - level course(s)
        - An additional 3 hr. upper-level studio, art history, or approved related discipline is required for art history majors with a studio minor. Please consult with advisor or chair.
        - For example, if a student opts to take ARS 280, he or she may select among the 300-level Printmaking options: ARS 381, ARS 383, ARS 385, or ARS 387.

## Minor Requirements

18 Total Credits

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- 18 hours from the following:
  - Minor



General Electives  
15 Total Credits  
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- Complete all of the following
  - Earned at least this many additional elective credits: 15
  - Elective hours vary by student, please see advisor.

Grand Total Credits: **78**

#### **4-Year Plan**

Year 1  
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Fall  
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- Complete all of the following
  - 6 hours from:
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Mathematics (MA 100+ Course)

Spring  
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- Complete all of the following
  - 3 hours from:
    - ARH103 - ARH SUR: WORLD ART (3)
  - 3 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS140 - 3D DESIGN (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Area II Charger Foundations Course

Year 2  
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Fall  
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- Complete all of the following
  - 9 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - HY103 - WORLD HISTORY TO 1500 (3)
  - 3 Hours Foreign Language (WLC 100+ Course)

Spring

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- Complete all of the following
  - 3 hours from:
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 Hours Art History Elective (ARH 300+ Course)
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Minor Course

Year 3

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Fall

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- Complete all of the following
  - 3 Hours Art History Elective (ARH 300+ Course)
  - 3 Hours Art Studio Elective (ARS 300+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area II Charger Foundations Course

Spring

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- Complete all of the following
  - 3 Hours Art History Elective (ARH 300+ Course)
  - 3 Hours Art History Elective (ARH 300+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area IV Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 3 Hours Art Studio Elective (ARS 300+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area II Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - ARH400 - SENIOR THESIS (3)
  - 3 Hours Area IV Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours General Elective

## **Art (BA) - Art Studio (Concentration)**

## **Description**

The BA in Art with a concentration in Art Studio allows students to focus their upper-division studies on any of seven areas: digital animation, game design, graphic design, painting/drawing, photography, printmaking, or sculpture. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art>.

## **Concentration Requirements**

Area V (Pre-Professional) Requirements

4 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Concentration Requirements

51 Total Credits

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- Complete all of the following
  - Lower Division Requirements
    - Complete all of the following
      - Art Studio Requirements
        - Complete all of the following
          - 12 hours from:
            - ARS123 - 2D DESIGN & COLOR THEORY (3)

- ARS140 - 3D DESIGN (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- ARS260 - DRAWING II (3)

- 9 hours from any ARS 200 - level course(s)

#### Art History Requirements

- 6 hours from:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH103 - ARH SUR: WORLD ART (3)

#### Upper Division Requirements

- Complete all of the following

- 3 hours from:
  - ARH309 - CONTEMPORARY ART HISTORY (3)

- 15 hours from any ARS 300 - level course(s)

- 6 hours from any ARS 400 - level course(s)

#### Upper Division Elective Options

- Complete all of the following
  - These are tracks are based on a student's interest, but they are not recognized concentrations or majors. Students will receive a Bachelor of Arts; Major: Art; Concentration: Art Studio.
  - Majors with an Art Studio focus have the option to complete a group exhibition (fine arts areas) or portfolio review (digital animation and graphic design) requirement. Students emphasizing in digital animation and graphic design may present a comprehensive portfolio as part of the coursework for their final 400-level course. All other art majors with an Art Studio focus may mount a senior group exhibition of their work. Contact the Department for details.

#### Digital Animation

- - ARS311 - GAME DESIGN: SCRIPTING & DES I (3)
  - ARS321 - ANIMATION: ORGANIC MODELING (3)
  - ARS325 - ANIMATION: HARD SURF MODELING (3)
  - ARS328 - ANIMATION: CONCEPT ART (3)
  - ARS327 - ANIMATION: VISUAL STORY DEV (3)
  - ARS329 - ANIMATION: 2D ANIMATION (3)
  - ARS322 - ANIMATION: 3D ANIMATION (3)
  - ARS324 - ANIMATION: TECHNICAL ARTS (3)
  - ARS415 - ANIMATION: TEAM GAME DESN I (3)
  - ARS416 - ANIMATION: TEAM GAME DESN II (3)
  - ARS425 - ANIMATION: SHORT FILM I (3)
  - ARS426 - ANIMATION: SHORT FILM II (3)

#### Graphic Design

- - ARS330 - GRAPHIC DESIGN: PRINT MEDIA I (3)
  - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
  - ARS333 - GRAPH DES: WATERCOLOR & DIG I (3)
  - ARS334 - GRAPH DES: WEB USER EXPER I (3)
  - ARS335 - GRAPHIC DESIGN: TYPOGRAPHY I (3)
  - ARS430 - GRAPHIC DESIGN: PRINT MEDIA II (3)
  - ARS432 - GRAPH DES: SENIOR PROJ MGMT (3)
  - ARS433 - GRAPH DES: WATERCOLOR & DIG II (3)
  - ARS434 - GRAPH DES: WEB USER EXPER II (3)
  - ARS435 - GRAPHIC DESIGN: TYPOGRAPHY II (3)

#### Painting/Drawing

- - ARS360 - DRAWING: FIGURE (3)
  - ARS375 - PAINTING: FIGURE I (3)
  - ARS376 - PAINTING: CONTEMPORARY I (3)
  - ARS377 - PAINTING: MIXED MEDIA I (3)
  - ARS460 - DRAWING: CONCEPTUAL (3)
  - ARS475 - PAINTING: FIGURE II (3)
  - ARS476 - PAINTING: CONTEMPORARY II (3)
  - ARS477 - PAINTING: MIXED MEDIA II (3)

#### Printmaking

- - MA536 - INTRO P-ADIC ANALYSIS (3)
  - ARS383 - PRINT: SCREENPRINT I (3)
  - ARS385 - PRINT: BOOK ARTS I (3)
  - ARS387 - PRINT: MONOPRINT & LITHOGRAPHY I (3)
  - ARS481 - PRINT: ETCHING & RELIEF II (3)
  - ARS483 - PRINT: SCREENPRINT II (3)
  - ARS485 - PRINT: BOOK ARTS II (3)
  - ARS487 - PRINT: MONOPRINT & LITHOGRAPHY II (3)

#### Photography

- - ARS350 - PHOTO: DIGITAL I (3)
  - ARS352 - PHOTO: DARKROOM I (3)
  - ARS353 - PHOTO; DARKRM, HIST & EXPER I (3)
  - ARS355 - PHOTO: DOCUMENTARY I (3)
  - ARS450 - PHOTO: DIGITAL II (3)
  - ARS452 - PHOTO: DARKROOM II (3)
  - ARS453 - PHOTO; DARKRM, HIST & EXPER II (3)
  - ARS455 - PHOTO: DOCUMENTARY II (3)

#### Sculpture

- - ARS340 - SCULP: FABRICATION I (3)
  - ARS341 - SCULP: CARVING I (3)
  - ARS342 - SCULP: CASTING I (3)
  - ARS347 - SPACE AND PLACE (3)
  - ARS440 - SCULP: FABRICATION II (3)
  - ARS447 - SCULP: SPACE AND PLACE II (3)
  - ARS442 - SCULP: CASTING II (3)
  - ARS447 - SCULP: SPACE AND PLACE II (3)

#### Others

- - Course Not Found
  - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - Course Not Found
  - ARS395 - SP TOPICS IN STUDIO ART (3)
  - ARS490 - PORTFOLIO DEVELOPMENT II (3)
  - ARS492 - ART INTERNSHIP (3)
  - Course Not Found
  - ARS494 - PROFESSIONAL PRACTICES (3)
  - ARS495 - INDEPENDENT PROJECTS (3)

#### Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

#### General Electives

6 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 6
  - Elective hours vary by student, please see advisor.

Grand Total Credits: **79**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Mathematics (MA 100+ Course)

Spring

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- Complete all of the following
  - 6 hours from:
    - ARS140 - 3D DESIGN (3)
    - ARS260 - DRAWING II (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Art History Elective (ARH 100+ Course)
  - 4 Hours Lab Science

Year 2

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Fall

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- Complete all of the following
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours History
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 3 Hours Art History Elective (ARH 100+ Course)
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Art Studio Elective (ARS 300+ Course)
  - 3 Hours Literature
  - 3 Hours 2nd History

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
  - 3 Hours Art Studio Elective (ARS 300+ Course)

- 3 Hours Fine Art
- 3 Hours Minor Course
- 3 Hours Minor Course

Spring

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- Complete all of the following
  - 3 Hours Art Studio Elective (ARS 300+ Course)
  - 3 Hours Area II Charger Foundations Course
  - 3 Hours Area IV Charger Foundations Course
  - 3 Hours Minor Course
  - 3 Hours Minor Course

Year 4

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Fall

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- Complete all of the following
  - 3 Hours Art Studio Elective (ARS 300+ Course)
  - 3 Hours Area II Charger Foundations Course
  - 3 Hours Area IV Charger Foundations Course
  - 3 Hours Minor Course
  - 3 Hours Minor Course

Spring

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- Complete all of the following
  - 3 Hours Art Studio Elective (ARS 300+ Course)
  - 3 Hours Art Studio Elective (ARS 400+ Course)
  - 3 Hours Art Studio Elective (ARS 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours General Elective

## **Art (BFA)**

### **Program Description**

The BFA in Fine Arts develops the skills, concepts, and professional practices to pursue a career as an artist and is the primary professional degree in Art Studio. It is also the preferred degree for students who plan to go on for a Master of Fine Arts (MFA) degree and is accredited by the National Association of Schools of Art and Design (NASAD). This major requires more studio courses than the BA and does not require a minor. **Students must pass a portfolio review as rising juniors.** For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art>.

### **Number of Credit Hours**

120

## **Degree Requirements**

### Degree Requirements

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- Complete all of the following
  - BA Degree Requirements (CAHS)
    - Complete all of the following
      - 30% of total degree requirements must be taken at 300 level or higher
      - Must have a 2.0 GPA in major, minor, and overall
      - No more than 6 credit hours of HPE may count in degree requirements
      - 12 of the last 18 credit hours must be taken at UAH
      - 25% of the major, minor, and overall coursework must be taken at UAH
      - No more than 50% of total degree requirement credit hours can come from a two-year school
  - Students must apply for acceptance to the BFA program. They must apply after they have completed all 4 foundations classes (ARS 160, ARS 123, ARS 140, and ARS 260), the 200 level (introductory) class in the Concentration, and one 300 level class in the major. They must apply before they complete 54 credit hours in Art Studio (ARS) and Art History (ARH). The application, which is available in the department office, involves submission of a transcript (3.0 GPA required in Art History and Art Studio classes), two essays, and a portfolio of five pieces (one drawing, one 3-D piece, one work using color, and two additional pieces in the area of concentration). The BFA Review is conducted at the end of the fall and spring terms and may be repeated. Students must pass a portfolio review as rising juniors.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:
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      - Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)



- ARH103 - ARH SUR: WORLD ART (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - TH122 - THEATRE APPRECIATION (3)
  - FMA123 - INTRO TO FILM STUDIES (3)
- 3 hours from:  
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 Area II: Humanities and Fine Arts - Literature
  - EH207 - READINGS LITERATURE/CULTURE I (3)
  - EH208 - READINGS LITERATURE/CULTURE 2 (3)
  - EH241 - LITERATURE WITHOUT BORDERS (3)
  - EH242 - MYTHOLOGY (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH244 - HEROES &/OR MONSTERS (3)
  - EH245 - LOVE &/OR ROMANCE (3)
  - EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:  
*keyboard\_arrow\_up*  
 Area II: Humanities and Fine Arts - Non-Literature
  - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH103 - ARH SUR: WORLD ART (3)
  - ARH120 - ARH SUR: SPECIAL TOPICS (3)
  - CM113 - PUBLIC SPEAKING (3)
  - FMA123 - INTRO TO FILM STUDIES (3)
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
  - PHL102 - INTRO TO ETHICS (3)
  - PHL103 - INTRODUCTION TO LOGIC (3)
  - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - TH122 - THEATRE APPRECIATION (3)
  - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
  - WLC204 - INTERNATIONAL CINEMA (3)
- keyboard\_arrow\_up*  
 Area II: Humanities and Fine Arts - WLC 101
  - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
  - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
  - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
  - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
  - WLC101MS - INTRO TO MEDICAL SPANISH (3)
  - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
  - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
- keyboard\_arrow\_up*  
 Area II: Humanities and Fine Arts - WLC 102
  - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
  - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
  - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
  - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
  - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
  - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
  - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
- keyboard\_arrow\_up*  
 Area II: Humanities and Fine Arts - WLC 201
  - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
  - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
  - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
  - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
  - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
  - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
- keyboard\_arrow\_up*  
 Area II: Humanities and Fine Arts - WLC 202
  - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)

- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Literature
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)

- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)

- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

4 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Grand Total Credits: **4**

## **Major Requirements**

Art Studio Foundation Core

30 Total Credits

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- Complete all of the following
  - 12 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS140 - 3D DESIGN (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - ARS260 - DRAWING II (3)

Studio Introduction

- Complete 1 of the following
  - Digital Animation Concentration Students
    - Complete all of the following

- 3 hours from:
  - ARS220 - ANIMATION: INTRODUCTION (3)
- 9 hours from:
  - ARS210 - GAME DESIGN: INTRODUCTION (3)
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
  - ARS240 - SCULPTURE: INTRODUCTION (3)
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - ARS270 - PAINTING: INTRODUCTION (3)
  - ARS280 - PRINTMAKING: INTRODUCTION (3)

All other BFA Concentration Students

- 12 hours from:
  - ARS210 - GAME DESIGN: INTRODUCTION (3)
  - ARS220 - ANIMATION: INTRODUCTION (3)
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
  - ARS240 - SCULPTURE: INTRODUCTION (3)
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - ARS270 - PAINTING: INTRODUCTION (3)
  - ARS280 - PRINTMAKING: INTRODUCTION (3)

Upper Division Requirements

- 6 hours from:
  - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - ARS494 - PROFESSIONAL PRACTICES (3)

Art History Core

12 Total Credits

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- 12 hours from:
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH103 - ARH SUR: WORLD ART (3)
  - ARH309 - CONTEMPORARY ART HISTORY (3)

Additional Requirements

6 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - Digital Animation Concentration Students
    - Complete all of the following
      - 3 hours from:
        - CS102 - INTRO TO C PROGRAMMING (3)
        - CS103 - INTRO PROGRAMMING USING JAVA (3)
        - CS104 - INTRO TO CS USING PYTHON (3)
      - 3 hours from:
        - MU305 - MUSIC TECHNOLOGY III (3)
        - MU306 - MUSIC TECHNOLOGY IV (3)

All other BFA Concentration Students

- Complete all of the following
  - Art History before 1800
    - 3 hours from:
      - ARH401 - ANCIENT GREEK ART (3)
      - ARH402 - MEDIEVAL ART (3)
      - ARH403 - RENAISSANCE ART (3)
      - ARH405 - ANCIENT ROMAN ART (3)
      - ARH306 - COLLAPSE OF CIVILIZATIONS (3)
      - ARH320 - SPECIAL TOPICS IN ART HY (3)
  - Art History after 1800
    - 3 hours from:

- ARH404 - EARLY 20TH-CENTURY MODERNISM (3)
- ARH407 - IMPRESSIONISM & POST-IMP (3)
- ARH410 - NINETEENTH CENTURY ART (3)
- ARH311 - PHILOSOPHY OF ART (3)
- ARH320 - SPECIAL TOPICS IN ART HY (3)
- HY310 - INTRODUCTION TO PUBLIC HISTORY (3)

Grand Total Credits: **48**

## **Art (BFA) - Fine Arts Digital Animation (Concentration)**

### **Description**

The BFA in Fine Arts with a concentration in Digital Animation focuses on Digital Animation. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/animation>.

### **Concentration Requirements**

Concentration Requirements

30 Total Credits

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- Complete all of the following
  - 12 hours from:
    - ARS311 - GAME DESIGN: SCRIPTING & DES I (3)
    - ARS321 - ANIMATION: ORGANIC MODELING (3)
    - ARS322 - ANIMATION: 3D ANIMATION (3)
    - ARS324 - ANIMATION: TECHNICAL ARTS (3)
    - ARS325 - ANIMATION: HARD SURF MODELING (3)
    - ARS327 - ANIMATION: VISUAL STORY DEV (3)
    - ARS328 - ANIMATION: CONCEPT ART (3)
    - ARS329 - ANIMATION: 2D ANIMATION (3)
  - 6 hours from:
    - ARS415 - ANIMATION: TEAM GAME DESN I (3)
    - ARS416 - ANIMATION: TEAM GAME DESN II (3)
    - ARS425 - ANIMATION: SHORT FILM I (3)
    - ARS426 - ANIMATION: SHORT FILM II (3)
  - 6 hours from:
    - ARS311 - GAME DESIGN: SCRIPTING & DES I (3)
    - ARS321 - ANIMATION: ORGANIC MODELING (3)
    - ARS322 - ANIMATION: 3D ANIMATION (3)
    - ARS324 - ANIMATION: TECHNICAL ARTS (3)
    - ARS325 - ANIMATION: HARD SURF MODELING (3)
    - ARS327 - ANIMATION: VISUAL STORY DEV (3)
    - ARS328 - ANIMATION: CONCEPT ART (3)
    - ARS329 - ANIMATION: 2D ANIMATION (3)
    - ARS415 - ANIMATION: TEAM GAME DESN I (3)
    - ARS416 - ANIMATION: TEAM GAME DESN II (3)
    - ARS425 - ANIMATION: SHORT FILM I (3)
    - ARS426 - ANIMATION: SHORT FILM II (3)

Major Electives

- Complete all of the following
  - 6 hours from the following:  
Courses listed below
  - Complete Any upper-level ARH or ARS courses
  - - CM330 - NONVERBAL COMMUNICATION (3)
    - CS121 - COMPUTER SCIENCE I (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS330 - ARTFCL INTEL & GAME DEV (3)

- CS347 - INTRO VIDEO GAME DESGN & PROGM (3)
- CS445 - INTRO COMPUTER GRAPHICS (3)
- CS446 - ADVANCED COMPUTER GRAPHICS (3)
- EH211 - INTRO CREATIVE WRITING (3)
- EH301 - TECHNICAL WRITING (3)
- EH410 - FICTION WRITING (3)
- EH429 - STUDIES IN AMERICAN CINEMA (3)
- EH442 - USABILITY STUDIES (3)
- EH454 - NEW MEDIA WRITING & RHETORIC (3)
- FMA210 - WRITING FOR VISUAL MEDIA (3)
- FMA260 - VIDEO PRODUCTION (3)
- FMA334 - HISTORY OF AMERICAN CINEMA (3)
- FMA360 - ADV VIDEO PRODUCTION (3)
- TH221 - ACTING (3)
- TH225 - ELEMENTS OF THEATRE PRODUCTION (3)
- TH355 - SCENE DESIGN (3)
- TH375 - SOUND DESIGN (3)
- TH425 - THEATRE MAINSTAGE (1 - 3)
- TH465 - DIRECTING (3)
- Other courses with approval

General Electives

27 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 27
  - Elective hours vary by program, see advisor.

Grand Total Credits: **57**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics

Spring

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- Complete all of the following
  - 6 hours from:
    - ARS140 - 3D DESIGN (3)
    - ARS220 - ANIMATION: INTRODUCTION (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)



- 3 Hours Art History Survey (ARH 100, 101, or 103)
- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 3 hours from:
    - ARS260 - DRAWING II (3)
  - 3 Hours Art History Survey (ARH 100, 101, or 103)
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Animation Elective (ARS 300+ Course)
  - 3 Hours Foreign Language (WLC 100+ Course)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Art History Survey (ARH 100, 101, or 103)
  - 6 Hours Animation Electives (ARS 300+ Courses)
  - 3 Hours History
  - 3 Hours Literature

Year 3

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Animation Elective (ARS 300+ or 400+ Course)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 3 hours from:
    - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
  - 3 hours from:
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
  - 3 Hours Art Studio Elective (ARS 200+ Course)
  - 3 Hours Animation Elective (ARS 300+ or 400+ Course)

Year 4

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - MU305 - MUSIC TECHNOLOGY III (3)
  - 3 Hours Animation Elective (ARS 300+ Course)
  - 3 Hours Animation Elective (ARS 400+ Course)
  - 3 Hours Social & Behavioral Science

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARS494 - PROFESSIONAL PRACTICES (3)
  - 3 Hours Animation Elective (ARS 400+ Course)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours Area IV Charger Foundations Course
  - 3 Hours General Elective (As Approved by Advisor)
  - BFA Portfolio Review

## **Art (BFA) - Fine Arts Drawing & Painting (Concentration)**

### **Description**

The BFA in Fine Arts with a concentration in Painting & Drawing focuses on Painting & Drawing. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/painting-drawing>.

## **Concentration Requirements**

### Concentration Requirements

30 Total Credits

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- Complete all of the following
  - 12 hours from:
    - ARS360 - DRAWING: FIGURE (3)
    - ARS375 - PAINTING: FIGURE I (3)
    - ARS376 - PAINTING: CONTEMPORARY I (3)
    - ARS377 - PAINTING: MIXED MEDIA I (3)
    - ARS395 - SP TOPICS IN STUDIO ART (3)
  - 6 hours from:
    - ARS460 - DRAWING: CONCEPTUAL (3)
    - ARS475 - PAINTING: FIGURE II (3)
    - ARS476 - PAINTING: CONTEMPORARY II (3)
    - ARS477 - PAINTING: MIXED MEDIA II (3)
    - ARS495 - INDEPENDENT PROJECTS (3)
- Major Electives
  - 12 hours from any ARH or ARS 300 - 400 level course(s)

### General Electives

12 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 12
  - Elective hours vary by program, see advisor.

Grand Total Credits: **42**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics

### Spring

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- Complete all of the following
  - 9 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARS140 - 3D DESIGN (3)
    - ARS270 - PAINTING: INTRODUCTION (3)

- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 3 hours Social & Behavioral Science

Year 2

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARS260 - DRAWING II (3)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours Painting & Drawing (ARS 300+ Course)
  - 3 Hours Introductory (ARS 200+ Course)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARH103 - ARH SUR: WORLD ART (3)
  - 6 Hours Painting & Drawing (ARS 300+ Courses)
  - 4 Hours Lab Science
  - 3 Hours History

Year 3

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 4 Hours Lab Science
  - 3 Hours Literature
  - BFA Portfolio Review

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Ancient (ARH 300+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours Fine Art

Year 4

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Fall

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- Complete all of the following
  - 3 Hours Modern (ARH 300+ Course)
  - 3 Hours Painting & Drawing (ARS 300+ Course)
  - 3 Hours Painting & Drawing (ARS 400+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Social & Behavioral Science

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARS494 - PROFESSIONAL PRACTICES (3)
  - 3 Hours Painting & Drawing (ARS 400+ Course)
  - 6 Hours Art Electives (ARS or ARH 300+ Courses)
  - 3 Hours Area IV Charger Foundations Course

## **Art (BFA) - Fine Arts Graphic Design (Concentration)**

### **Description**

The BFA in Fine Arts with a concentration in Graphic Design focuses on Graphic Design. For further information, please refer to the department web site at [https://www.uah.edu/ahs/departments/art/programs/graphic\\_design](https://www.uah.edu/ahs/departments/art/programs/graphic_design).

### **Concentration Requirements**

Concentration Requirements

30 Total Credits

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- Complete all of the following
  - 12 hours from:
    - ARS330 - GRAPHIC DESIGN: PRINT MEDIA I (3)
    - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
    - ARS333 - GRAPH DES: WATERCOLOR & DIG I (3)
    - ARS334 - GRAPH DES: WEB USER EXPER I (3)
    - ARS335 - GRAPHIC DESIGN: TYPOGRAPHY I (3)
    - ARS395 - SP TOPICS IN STUDIO ART (3)
  - 6 hours from:
    - ARS430 - GRAPHIC DESIGN: PRINT MEDIA II (3)
    - ARS432 - GRAPH DES: SENIOR PROJ MGMT (3)
    - ARS433 - GRAPH DES: WATERCOLOR & DIG II (3)
    - ARS434 - GRAPH DES: WEB USER EXPER II (3)
    - ARS435 - GRAPHIC DESIGN: TYPOGRAPHY II (3)
    - ARS495 - INDEPENDENT PROJECTS (3)

Major Electives

- 12 hours from any ARH or ARS 300 - 400 level course(s)

General Electives

27 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 27
  - Elective hours vary by program, see advisor.

Grand Total Credits: **57**

### **4-Year Plan**

## Year 1

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### Fall

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- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Mathematics

### Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARS140 - 3D DESIGN (3)
    - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Social & Behavioral Science

## Year 2

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### Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARS260 - DRAWING II (3)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours Graphic Design (ARS 300+ Course)
  - 3 Hours Introductory (ARS 200+ Course)

### Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARH103 - ARH SUR: WORLD ART (3)
  - 6 Hours Graphic Design (ARS 300+ Courses)
  - 3 Hours History
  - 4 Hours Lab Science

## Year 3

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Literature
  - 4 Hours Lab Science
  - BFA Portfolio Review

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
  - 3 Hours Ancient (ARH 300+ Course)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Area II Charger Foundations Course

Year 4

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARS494 - PROFESSIONAL PRACTICES (3)
  - 3 Hours Modern (ARH 300+ Course)
  - 3 Hours Graphic Design (ARS 400+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Area IV Charger Foundations Course

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Graphic Design (ARS 300+ Course)
  - 3 Hours Graphic Design (ARS 400+ Course)
  - 6 Hours Art Electives (ARS or ARH 300+ Courses)
  - 3 Hours Area IV Charger Foundations Course

## **Art (BFA) - Fine Arts Photography (Concentration)**

### **Description**

The BFA in Fine Arts with a concentration in Photography focuses on Photography. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/photography>.

## **Concentration Requirements**

Concentration Requirements

30 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ARS350 - PHOTO: DIGITAL I (3)
    - ARS352 - PHOTO: DARKROOM I (3)
    - ARS353 - PHOTO; DRKRM, HIST & EXPER I (3)
    - ARS355 - PHOTO: DOCUMENTARY I (3)
    - ARS395 - SP TOPICS IN STUDIO ART (3)
  - 6 hours from:
    - ARS450 - PHOTO: DIGITAL II (3)
    - ARS452 - PHOTO: DARKROOM II (3)
    - ARS453 - PHOTO; DRKRM, HIST & EXPER II (3)
    - ARS455 - PHOTO: DOCUMENTARY II (3)
    - ARS495 - INDEPENDENT PROJECTS (3)
- Major Electives
  - 12 hours from any ARH or ARS 300 - 400 level course(s)

General Electives

27 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 27
  - Elective hours vary by program, see advisor.

Grand Total Credits: **57**

## **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARS140 - 3D DESIGN (3)
    - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - 3 hours from:
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)



■ EH103 - ACCELERATED COLLEGE WRITING (3)

- 3 Hours Social & Behavioral Science

Year 2

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARS260 - DRAWING II (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Photography (ARS 300+ Course)
  - 3 Hours Foreign Language (WLC 100+ Course)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARH103 - ARH SUR: WORLD ART (3)
  - 6 Hours Photography (ARS 300+ Courses)
  - 4 Hours Lab Science
  - 3 Hours History

Year 3

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Literature
  - 4 Hours Lab Science

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Ancient (ARH 300+ Course)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Area II Charger Foundations Course
  - 3 Hours Fine Art

Year 4

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Photography (ARS 400+ Course)
  - 3 Hours Modern (ARH 300+ Course)
  - 6 Hours Art Electives (ARS or ARH 300+ Courses)
  - 3 Hours Social & Behavioral Sciences

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARS494 - PROFESSIONAL PRACTICES (3)
  - 3 Hours Photography (ARS 400+ Course)
  - 3 Hours Photography (ARS 300+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Area IV Charger Foundations Course

## **Art (BFA) - Fine Arts Printmaking (Concentration)**

### **Description**

The BFA in Fine Arts with a concentration in Printmaking focuses on Printmaking. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/printmaking>.

### **Concentration Requirements**

Concentration Requirements

30 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ARS387 - PRINT: MONOPRINT & LITHOGRAPHY I (3)
    - ARS383 - PRINT: SCREENPRINT I (3)
    - ARS385 - PRINT: BOOK ARTS I (3)
    - ARS387 - PRINT: MONOPRINT & LITHOGRAPHY I (3)
    - ARS395 - SP TOPICS IN STUDIO ART (3)
  - 6 hours from:
    - ARS481 - PRINT: ETCHING & RELIEF II (3)
    - ARS483 - PRINT: SCREENPRINT II (3)
    - ARS485 - PRINT: BOOK ARTS II (3)
    - ARS487 - PRINT: MONOPRINT & LITHOGRAPHY II (3)
    - ARS495 - INDEPENDENT PROJECTS (3)
- Major Electives
  - 12 hours from any ARH or ARS 300 - 400 level course(s)

General Electives

27 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 27
  - Elective hours vary by program, see advisor.

Grand Total Credits: **57**

### **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)

- ARS160 - DRAWING: FOUNDATIONS (3)
- 3 hours from:
  - EH101 - COLLEGE WRITING I (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)
- Earned at least 1 of the following:
  - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - HON399 - HONORS INTERDISCIPLINARY SEM (3)
- 3-4 Hours Mathematics

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARS140 - 3D DESIGN (3)
    - ARS280 - PRINTMAKING: INTRODUCTION (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Social & Behavioral Science

Year 2

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARS260 - DRAWING II (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Printmaking (ARS 300+ Course)
  - 3 Hours Foreign Language (WLC 100+ Course)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARH103 - ARH SUR: WORLD ART (3)
  - 6 Hours Printmaking (ARS 300+ Courses)
  - 4 Hours Lab Science
  - 3 Hours History

Year 3

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - ARS390 - PORTFOLIO DEVELOPMENT I (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 4 Hours Lab Science
  - 3 Hours Literature

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Ancient (ARH 300+ Course)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Fine Art
  - 3 Hours Area II Charger Foundations Course

Year 4

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Printmaking (ARS 400+ Course)
  - 3 Hours Modern (ARH 300+ Course)
  - 6 Hours Art Electives (ARS or ARH 300+ Courses)
  - 3 Hours Social & Behavioral Science

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARS494 - PROFESSIONAL PRACTICES (3)
  - 3 Hours Printmaking (ARS 400+ Course)
  - 3 Hours Printmaking (ARS 300+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Area IV Charger Foundations Course

## **Art (BFA) - Fine Arts Sculpture (Concentration)**

### **Description**

The BFA in Fine Arts with a concentration in Sculpture focuses on Sculpture. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/sculpture>.

## **Concentration Requirements**

### Concentration Requirements

30 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ARS340 - SCULP: FABRICATION I (3)
    - ARS341 - SCULP: CARVING I (3)
    - ARS342 - SCULP: CASTING I (3)
    - Course Not Found
    - ARS347 - SPACE AND PLACE (3)
    - ARS395 - SP TOPICS IN STUDIO ART (3)
  - 6 hours from:
    - ARS440 - SCULP: FABRICATION II (3)
    - ARS441 - SCULP: CARVING II (3)
    - ARS442 - SCULP: CASTING II (3)
    - ARS447 - SCULP: SPACE AND PLACE II (3)
    - ARS495 - INDEPENDENT PROJECTS (3)
- Major Electives
  - 12 hours from any ARH or ARS 300 - 400 level course(s)

### General Electives

27 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 27
  - Elective hours vary by program, see advisor.

Grand Total Credits: **57**

## **4-Year Plan**

### Year 1

*keyboard\_arrow\_up*

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### Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101N - CHARGER SUCCESS - NURSING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics

### Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARS140 - 3D DESIGN (3)
    - ARS240 - SCULPTURE: INTRODUCTION (3)

- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 3 Hours Social & Behavioral Science

Year 2

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARS260 - DRAWING II (3)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Sculpture (ARS 300+ Course)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ARH103 - ARH SUR: WORLD ART (3)
  - 6 Hours Sculpture (ARS 300+ Courses)
  - 4 Hours Lab Science
  - 3 Hours History

Year 3

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ARH309 - CONTEMPORARY ART HISTORY (3)
    - ARS353 - PHOTO; DRKRM, HIST & EXPER I (3)
  - 3 Hours Introductory (ARS 200+ Course)
  - 4 Hours Lab Science
  - 3 Hours Literature
  - BFA Portfolio Review

Spring

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- Complete all of the following
  - 3 Hours Ancient (ARH 300+ Course)
  - 3 Hours Introductory (ARS 200+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Fine Art
  - 3 Hours Area II Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 3 Hours Sculpture (ARS 400+ Course)
  - 3 Hours Modern (ARH 300+ Course)
  - 6 Hours Art Electives (ARS or ARH 300+ Courses)
  - 3 Hours Social & Behavioral Science

Spring

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- Complete all of the following
  - 3 hours from:
    - ARS494 - PROFESSIONAL PRACTICES (3)
  - 3 Hours Sculpture (ARS 400+ Course)
  - 3 Hours Sculpture (ARS 300+ Course)
  - 3 Hours Art Elective (ARS or ARH 300+ Course)
  - 3 Hours Area IV Charger Foundations Course

## **Art History (Minor)**

### **Program Description**

The minor in Art History aims to Students focusing on the studio discipline are strongly encouraged to pursue a minor in Art History which will give them a better understanding of the visual arts tradition.

For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art>.

### **Number of Credit Hours**

21

### **Degree Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - ARH 320: Depending on the topic of this course, it may satisfy either the Pre- or Post- 1800 requirement, or function as an elective.
  - Transfer students must take at least six semester hours of art courses at the 300+ level or above at UAH.

## **Minor Requirements**

### Required Courses

12 Total Credits

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- Complete
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH103 - ARH SUR: WORLD ART (3)
  - ARH309 - CONTEMPORARY ART HISTORY (3)

### Pre-1800

3 Total Credits

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- Earned at least 1 of the following:
  - ARH401 - ANCIENT GREEK ART (3)
  - ARH402 - MEDIEVAL ART (3)
  - ARH403 - RENAISSANCE ART (3)
  - ARH405 - ANCIENT ROMAN ART (3)
  - ARH306 - COLLAPSE OF CIVILIZATIONS (3)
  - ARH320 - SPECIAL TOPICS IN ART HY (3)

### Post-1800

3 Total Credits

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- Earned at least 1 of the following:
  - ARH404 - EARLY 20TH-CENTURY MODERNISM (3)
  - ARH407 - IMPRESSIONISM & POST-IMP (3)
  - ARH410 - NINETEENTH CENTURY ART (3)
  - ARH311 - PHILOSOPHY OF ART (3)
  - ARH320 - SPECIAL TOPICS IN ART HY (3)
  - HY310 - INTRODUCTION TO PUBLIC HISTORY (3)

### ARH 300+ Elective

3 Total Credits

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- Earned at least 1 of the following:
  - ARH401 - ANCIENT GREEK ART (3)
  - ARH402 - MEDIEVAL ART (3)
  - ARH403 - RENAISSANCE ART (3)
  - ARH404 - EARLY 20TH-CENTURY MODERNISM (3)
  - ARH405 - ANCIENT ROMAN ART (3)
  - ARH306 - COLLAPSE OF CIVILIZATIONS (3)
  - ARH407 - IMPRESSIONISM & POST-IMP (3)
  - ARH410 - NINETEENTH CENTURY ART (3)
  - ARH311 - PHILOSOPHY OF ART (3)
  - ARH320 - SPECIAL TOPICS IN ART HY (3)

Grand Total Credits: **21**



## **Art Studio (Minor)**

### **Program Description**

Transfer students must take at least six semester hours of art courses at the 300+ level at UAH

### **Number of Credit Hours**

21

### **Degree Requirements**

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### **Minor Requirements**

Required Courses

3 Total Credits

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- Complete
  - ARS160 - DRAWING: FOUNDATIONS (3)

ARS 200 Level Courses

6 Total Credits

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- Complete all of the following
  - 6 hours from any ARS 200 - level course(s)
  - Although all 200-level studio courses with the exception of ARS 240 require ARS 123 and ARS 160 as pre-requisites, Art Studio minors may take these courses without the required pre-requisites. Please contact department chair or academic advising office for prerequisite override when registering.

ARS 300 Level Courses

12 Total Credits

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- Complete all of the following
  - 12 hours from any ARS 300 - level course(s)
  - May include 400-level courses if the corresponding 300-level courses are successfully completed. For example, a student passing ARS 330 may take ARS 430 to count within the 12 semester hour total at the upper division.

Grand Total Credits: **21**

## **Audio Production and Sound Design (Minor)**

### **Program Description**

Students may select music technology as a supportive minor for programs such as Computer Engineering, Electrical Engineering, Computer Science, Animation, Theatre, and Film and Media Arts among other related fields. The minor provides knowledge of industry standards in studio recording techniques, live sound design, and essential equipment, hardware, and software related to the field of music technology.

### **Number of Credit Hours**

23

### **Minor Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - MU106 - INTRO TO MUSIC TECHNOLOGY (1)
    - MU108 - INTRODUCTION TO MUSIC THEORY (3)
    - MU207 - MUSIC TECHNOLOGY I (3)
    - MU208 - MUSIC TECHNOLOGY II (3)
    - MU305 - MUSIC TECHNOLOGY III (3)
    - MU306 - MUSIC TECHNOLOGY IV (3)
    - MU406 - INTERNSHIP IN MUSIC TECHNOLOGY (3)
  - 1 hours from the following:  
MUX 300 level Ensemble

Grand Total Credits: **23**

## **Communication Arts (BA)**

### **Program Description**

The BA in Communication Arts is an intersectional program that prepares students for today's communicatively intense world. Students examine and practice message construction and meaning through rhetorical, written, and mediated forms. The major offers an array of courses that enhance students' speaking, writing, research, and critical thinking skills. For further information, please refer to the department website at <https://www.uah.edu/ahs/departments/communication-arts/programs/undergraduate>.

### **Number of Credit Hours**

120

## **Degree Requirements**

### Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)

- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

17 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 13 hours from the following:

Literature, Humanities, Fine Arts, Mathematics, Lab Science, and Social and Behavioral Sciences.  
AHS 250 & AHS 300 may also count as a pre-professional elective.

Grand Total Credits: **17**



## **Major Requirements**

Major Requirements

0 Total Credits

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- See Concentrations for Major Requirements

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

8 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 8
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - 3-4 Hours Mathematics (MA 100+ Course)
  - 3 Hours Social & Behavioral Science

Spring

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- Complete all of the following
  - 3 hours from:
    - CM113 - PUBLIC SPEAKING (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Fine Art
  - 3 Hours Social & Behavioral Science

- 4 Hours Lab Science

Year 2

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Fall

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- Complete all of the following
  - 6 hours from:
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
    - HY103 - WORLD HISTORY TO 1500 (3)
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Humanities or Literature
  - 3 Hours Minor Course

Spring

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- Complete all of the following
  - 3 hours from:
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 Hours Literature
  - 3 Hours Communication Arts Elective
  - 4 Hours Lab Science
  - 3 Hours Minor Course

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - CM375 - RHETORICAL CRITICISM (3)
  - 3 Hours Communication Arts Elective
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - CM310 - PERSUASION (3)
    - CM331 - COMMUNICATION THEORY (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)
  - 3 Hours Communication Arts Elective
  - 3 Hours Communication Arts Elective (CM 300+ or 400+ course)
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - CM370 - COMM RESEARCH METHODS (3)
  - 3 Hours Communication Arts Elective (CM 300+ or 400+ course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - CM431 - SENIOR SEMINAR (3)
  - 3 Hours Communication Arts Elective (CM 300+ or 400+ course)
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours General Elective

## **Communication Arts (BA) - Communication Arts, General (Concentration)**

### **Description**

Communication Arts is an intersectional program that prepares students for today's communicatively intense world. Students examine and practice message construction and meaning through rhetorical, written, and mediated forms. The major offers an array of courses that enhance students' speaking, writing, research, and critical thinking skills. For further information, please refer to the department website at <https://www.uah.edu/ahs/departments/communication-arts/programs/undergraduate>.

### **Concentration Requirements**

- Complete all of the following
  - 15 hours from:
    - CM113 - PUBLIC SPEAKING (3)
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
    - CM370 - COMM RESEARCH METHODS (3)
    - CM375 - RHETORICAL CRITICISM (3)
    - CM431 - SENIOR SEMINAR (3)
  - 3 hours from:
    - CM310 - PERSUASION (3)
    - CM331 - COMMUNICATION THEORY (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)
  - 9 hours from any CM 300 - 400 level course(s)
  - 9 hours from any CM 100 - 400 level course(s)
  - CM 313 is not allowed to count in CM major or minor.

Grand Total Credits: **36**

## **Communication Arts (BA) - Public Relations (Concentration)**

### **Description**

The Public Relations concentration is designed to prepare students for professional work in the area of public relations through a mix of journalism, media, and public relations coursework. Students blend theory with practice to help them become better communicators, thinkers, writers, and content creators in preparation for professional work in public relations organizations. Students gain hands-on experience through a public relations-focused internship completed during the senior seminar course. For further information, please refer to <https://www.uah.edu/ahs/departments/communication-arts>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - CM113 - PUBLIC SPEAKING (3)
    - CM205 - INTRO TO JOURNALISM (3)
    - CM220 - INTRO PUBLIC RELATIONS (3)
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
    - CM431 - SENIOR SEMINAR (3)
  - Earned at least 1 of the following:
    - CM331 - COMMUNICATION THEORY (3)
    - CM310 - PERSUASION (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)
  - Earned at least 1 of the following:
    - CM370 - COMM RESEARCH METHODS (3)
    - CM375 - RHETORICAL CRITICISM (3)
  - Earned at least 5 of the following:
    - CM405 - ADVANCED MEDIA WRITING (3)
    - CM420 - PUBLIC RELATIONS WRITING (3)
    - CM430 - MASS MEDIA IN AMERICA (3)
    - CM435 - SOCIAL MEDIA (3)
    - CM440 - PUBLIC RELATIONS CAMPAIGN (3)
    - CM444 - ADVERTISING (3)
    - CM451 - ORGANIZATIONAL TRNG & DEVELOP (3)
    - CM460 - CRISIS COMMUNICATION (3)

Grand Total Credits: **36**

## Communication Arts (Minor)

### Program Description

The minor in Communication Arts complements many other majors to broaden students' understanding of how messages are produced, transmitted, and understood. Through theoretical and practical means, students gain a deeper knowledge of how to effectively communicate within and across various contexts. For further information, please refer to the department website at <https://www.uah.edu/ahs/departments/communication-arts/programs/undergraduate>.

### Number of Credit Hours

21

### Degree Requirements

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### Minor Requirements

Required Courses

9 Total Credits

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- Complete all of the following
  - 6 hours from:
    - CM113 - PUBLIC SPEAKING (3)
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - 3 hours from:
    - CM310 - PERSUASION (3)
    - CM331 - COMMUNICATION THEORY (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)

Electives

12 Total Credits

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- Complete all of the following
  - 9 hours from any CM 300 - 400 level course(s)
  - 3 hours from any CM 100 - 400 level course(s)

Grand Total Credits: **21**

## **Creative Writing (Minor)**

### **Program Description**

The minor in Creative Writing gives students an opportunity to develop their creative writing talents by participating in writing workshops and studying literary works. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/english/programs/undergraduate>.

### **Number of Credit Hours**

21

### **Degree Requirements**

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### **Minor Requirements**

Required Courses

12 Total Credits

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- Complete all of the following
  - Complete
    - EH211 - INTRO CREATIVE WRITING (3)
    - EH410 - FICTION WRITING (3)
    - EH411 - POETRY WRITING (3)
  - Earned at least 1 of the following:
    - EH412 - SPEC STUDIES CREATIVE WRITING (3)
    - EH414 - CREATIVE NONFICTION WRITING (3)

Literature Courses

9 Total Credits

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- 9 hours from any EH 300 - 400 level course(s)

Grand Total Credits: **21**

## Digital Fabrications (Minor)

### Program Description

The minor in digital fabrication offers a plan of study in digital and sculptural studio art with an emphasis on the use of digital tools for making. It also provides vocational training for students from all majors by giving them practical, hands-on experience with traditional fabrication methods combined with digital modeling, prototyping and fabrication. When combined with an appropriate major, the program prepares students for work in a number of growing fields, such as manufacturing and technology, architectural design, furniture design, robotics, user experience, medical device development, fine arts, and more. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art>.

### Number of Credit Hours

21

### Major Requirements

Minor Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - ARS140 - 3D DESIGN (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - ARS240 - SCULPTURE: INTRODUCTION (3)
    - ARS348 - DIGITAL FABRICATION (3)
    - ARS448 - DIGITAL FABRICATION II (3)
  - Electives
  - 6 hours from:
    - ARS220 - ANIMATION: INTRODUCTION (3)
    - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
    - ARS340 - SCULP: FABRICATION I (3)
    - ARS341 - SCULP: CARVING I (3)
    - ARS342 - SCULP: CASTING I (3)
    - ARS440 - SCULP: FABRICATION II (3)
    - ARS441 - SCULP: CARVING II (3)
    - ARS442 - SCULP: CASTING II (3)
    - ARS447 - SCULP: SPACE AND PLACE II (3)
    - ET310 - COMPUTER-AIDED DESIGN (3)

Grand Total Credits: **21**

## English (BA)

### Program Description

The BA in English program is designed to advance careful, sophisticated reading practices and complex analytical and research skills. The curriculum prepares students for a wide array of professional endeavors, including law, teaching, publishing, technical communication, advertising, media, and business, as well as the pursuit of advanced degrees. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/english/programs/undergraduate>.

### Number of Credit Hours

120

## **Degree Requirements**

### Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)



- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **English (BA) - English, General (Concentration)**

### **Description**

The BA in English with a General English concentration asks students to engage in the cultural, theoretical, and rhetorical function of works of fiction and non-fiction. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/english>.

### **Concentration Requirements**

Area V (Pre-Professional) Requirements

20 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 16 hours from the following:  
Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Major Requirements

36 Total Credits

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- Complete all of the following  
Core Courses
  - Complete all of the following
    - 3 hours from:
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH242 - MYTHOLOGY (3)
    - 6 hours from:
      - EH211 - INTRO CREATIVE WRITING (3)
      - EH305 - INTRO TO LITERARY STUDIES (3)
    - 3 hours from:
      - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
      - EH301 - TECHNICAL WRITING (3)
      - EH340 - ACADEMIC WRITING (3)

Major Electives

- Complete all of the following
  - 24 hours from:
    - EH242 - MYTHOLOGY (3)
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
    - EH302 - TECHNICAL EDITING (3)
    - EH320 - PRACTICUM IN WRITING (3)
    - EH340 - ACADEMIC WRITING (3)
    - EH400 - COMPOSITION STUDIES FOR TCHERS (3)
    - EH401 - THEORY & PRACTICE IN TECH COMM (3)
    - EH403 - LITERARY CRITICISM & THEORY (3)
    - Course Not Found
    - EH408 - HISTORY OF ENGLISH LANGUAGE (3)

- EH409 - PROPOSAL WRITING (3)
  - EH410 - FICTION WRITING (3)
  - EH411 - POETRY WRITING (3)
  - EH412 - SPEC STUDIES CREATIVE WRITING (3)
  - EH413 - CHILDREN'S & ADOLESCENT LIT (3)
  - EH414 - CREATIVE NONFICTION WRITING (3)
  - EH415 - ANGLOPHONE/POSTCOLONIAL LIT (3)
  - EH418 - REP TEXTS-WOMEN WRITERS (3)
  - Course Not Found
  - EH422 - STUDIES IN THE NOVEL (3)
  - EH423 - CONTEMPORARY BRITISH LITERATUR (3)
  - EH424 - POETRY AND POETICS (3)
  - Course Not Found
  - EH429 - STUDIES IN AMERICAN CINEMA (3)
  - EH430 - THE AMERICAN NOVEL (3)
  - Course Not Found
  - EH433 - WILLIAM FAULKNER (3)
  - EH434 - SCIENCE FICTION (3)
  - EH435 - SPECIAL STUDIES AMERICAN LIT (3)
  - Course Not Found
  - EH438 - AFRICAN AMERICAN LITERATURE (3)
  - Course Not Found
  - EH440 - SPECIAL TOPICS ENGLISH STUDIES (3)
  - EH442 - USABILITY STUDIES (3)
  - EH448 - THE BIBLE AS LITERATURE (3)
  - EH450 - CHAUCER (3)
  - EH451 - ARTHURIAN ROMANCE (3)
  - EH452 - USER-CENTERED DESIGN (3)
  - EH454 - NEW MEDIA WRITING & RHETORIC (3)
  - EH460 - SIXTEENTH-CENTURY LITERATURE (3)
  - EH461 - SHAKESPEARE I (3)
  - EH462 - SHAKESPEARE II (3)
  - EH465 - DRAMATIC LITERATURE (3)
  - EH470 - MILTON (3)
  - EH473 - EARLY MODERN LITERATURE (3)
  - EH475 - RHETORIC AND WRITING (3)
  - Course Not Found
  - Course Not Found
  - EH498 - INDEPENDENT STUDY (3)
  - Course Not Found
- In the electives area, only one class may be at the 200 level, no more than 9 hours may be in creative writing, and 6 of the hours must be at the 400+ level.

#### Minor Requirements

18 Total Credits

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- 18 hours from the following:  
minor

#### General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, see advisor.

Grand Total Credits: **79**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Fine Art
  - 3 Hours Social & Behavioral Science
  - 3-4 Hours Mathematics

Spring

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- Complete all of the following
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Humanities or 2nd Fine Art
  - 3 Hours 2nd Social & Behavioral Science
  - 3 Hours History
  - 4 Hours Lab Science

Year 2

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Fall

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- Complete all of the following
  - 3 Hours Literature
  - 3 Hours 2nd History or 3rd Social & Behavioral Science
  - 4 Hours Lab Science
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - EH211 - INTRO CREATIVE WRITING (3)
  - 6 Hours Minor Courses
  - 6 Hours Area V Charger Foundations Courses

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - EH305 - INTRO TO LITERARY STUDIES (3)

- 3 Hours English Elective (EH 200+ Course)
- 3 Hours English Elective (EH 300+ or 400+ Course)
- 6 Hours Area V Charger Foundations Courses

Spring

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- Complete all of the following
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
    - EH340 - ACADEMIC WRITING (3)
  - 6 Hours English Electives (EH 300+ or 400+ Courses)
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 6 Hours English Electives (EH 300+ or 400+ Courses)
  - 6 Hours Minor Courses
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 Hours English Electives (EH 300+ or 400+ Courses)
  - 6 Hours Minor Courses
  - 3 Hours General Elective

## **English (BA) - JUMP: BA EH, English (MA)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BA in English to an MA in English is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.



## **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Approved Master's Program**

English (MA)

## **Max Shared Hours**

12

## **Minimum GPA**

3.50

## **JUMP Launch (Undergraduate Program)**

JUMP\_EH@uah.edu

## **JUMP Landing (Graduate Program)**

MA\_English@uah.edu

## **JUMP Admission Requirements**

- Complete all of the following
  - Have junior standing
  - Have completed EH 305 and sophomore literature requirements
  - Demonstrate master's level work through success in those or subsequent courses

## **English (BA) - Language Arts (Concentration)**

### **Description**

The BA in English with a concentration in Language Arts asks students to engage in the cultural, theoretical, and rhetorical function of works of fiction and non-fiction. It also prepares students to teach middle and high school students about English. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/english>.

### **Concentration Requirements**

Major Requirements

45 Total Credits

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- Complete all of the following
  - Earned at least 2 of the following:
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - Complete
    - EH305 - INTRO TO LITERARY STUDIES (3)
    - ESL410 - INTRO TO LANGUAGE SYSTEMS (3)
    - EH400 - COMPOSITION STUDIES FOR TCHERS (3)
- American Literature
  - 3 hours from:
    - EH336 - SURVEY AMERICAN LITERATURE (3)
    - EH422 - STUDIES IN THE NOVEL (3)
    - EH429 - STUDIES IN AMERICAN CINEMA (3)
    - EH430 - THE AMERICAN NOVEL (3)
    - EH433 - WILLIAM FAULKNER (3)
    - EH435 - SPECIAL STUDIES AMERICAN LIT (3)
    - EH438 - AFRICAN AMERICAN LITERATURE (3)
- English Literature
  - 3 hours from:
    - EH335 - SURVEY BRITISH LITERATURE (3)
    - EH418 - REP TEXTS-WOMEN WRITERS (3)
    - EH422 - STUDIES IN THE NOVEL (3)
    - EH423 - CONTEMPORARY BRITISH LITERATUR (3)
    - EH440 - SPECIAL TOPICS ENGLISH STUDIES (3)
    - EH450 - CHAUCER (3)
    - EH451 - ARTHURIAN ROMANCE (3)
    - EH460 - SIXTEENTH-CENTURY LITERATURE (3)
    - EH461 - SHAKESPEARE I (3)
    - EH462 - SHAKESPEARE II (3)
    - EH470 - MILTON (3)
    - EH473 - EARLY MODERN LITERATURE (3)
- The Novel
  - 3 hours from:
    - EH422 - STUDIES IN THE NOVEL (3)
    - EH430 - THE AMERICAN NOVEL (3)
    - EH435 - SPECIAL STUDIES AMERICAN LIT (3)
    - EH440 - SPECIAL TOPICS ENGLISH STUDIES (3)
- Literature Elective
  - Complete all of the following
    - 3 hours from:
      - EH335 - SURVEY BRITISH LITERATURE (3)
      - EH336 - SURVEY AMERICAN LITERATURE (3)
      - EH403 - LITERARY CRITICISM & THEORY (3)
      - EH408 - HISTORY OF ENGLISH LANGUAGE (3)
      - EH410 - FICTION WRITING (3)
      - EH411 - POETRY WRITING (3)
      - EH412 - SPEC STUDIES CREATIVE WRITING (3)
      - EH415 - ANGLOPHONE/POSTCOLONIAL LIT (3)
      - EH418 - REP TEXTS-WOMEN WRITERS (3)
      - EH422 - STUDIES IN THE NOVEL (3)
      - EH423 - CONTEMPORARY BRITISH LITERATUR (3)
      - EH424 - POETRY AND POETICS (3)
      - EH429 - STUDIES IN AMERICAN CINEMA (3)
      - EH430 - THE AMERICAN NOVEL (3)

- EH433 - WILLIAM FAULKNER (3)
- EH434 - SCIENCE FICTION (3)
- EH435 - SPECIAL STUDIES AMERICAN LIT (3)
- EH438 - AFRICAN AMERICAN LITERATURE (3)
- EH440 - SPECIAL TOPICS ENGLISH STUDIES (3)
- EH448 - THE BIBLE AS LITERATURE (3)
- EH450 - CHAUCER (3)
- EH451 - ARTHURIAN ROMANCE (3)
- EH460 - SIXTEENTH-CENTURY LITERATURE (3)
- EH461 - SHAKESPEARE I (3)
- EH462 - SHAKESPEARE II (3)
- EH465 - DRAMATIC LITERATURE (3)
- EH470 - MILTON (3)
- EH473 - EARLY MODERN LITERATURE (3)
- Or 3 hours from American Literature, English Literature, or The Novel Speech, Communication, Writing, Theatre
- 18 hours from:
  - CM113 - PUBLIC SPEAKING (3)
  - CM205 - INTRO TO JOURNALISM (3)
  - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - CM430 - MASS MEDIA IN AMERICA (3)
  - TH221 - ACTING (3)
  - TH425 - THEATRE MAINSTAGE (1 - 3)

#### Education Requirements

40 - 42 Total Credits

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- Complete
  - ED301 - INTRO TO EDUCATION PRACTICUM (0)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - ED308 - EDUCATIONAL PSYCHOLOGY (3)
  - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
  - ED350 - TECHNOLOGY IN CLASSROOM (3)
  - ED408 - TCHG READING/CONTENT AREA (3)
  - ED410 - FOUNDATIONS EDUC EVALUAT (3)
  - ED421 - SECNDRY ELA INSTR WRIT TO READ (2 - 3)
  - ED431 - SEC ELA METHD: READING TO WRIT (2 - 3)
  - ED497 - HIGH SCHOOL INTERNSHIP (12)
  - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
  - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)

Grand Total Credits: **85 - 87**

#### **4-Year Plan**

Year 1

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No Rules

Fall

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- Complete all of the following
  - 6 hours from:
    - CM113 - PUBLIC SPEAKING (3)
    - TH221 - ACTING (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

- 3 Hours Mathematics (MA 100+ Course)
- 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 4 Hours Lab Science
  - 3 Hours Fine Art

Year 2

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No Rules

Fall

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- Complete all of the following
  - 6 hours from:
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - CM205 - INTRO TO JOURNALISM (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 9 hours from:
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - CM430 - MASS MEDIA IN AMERICA (3)
    - TH425 - THEATRE MAINSTAGE (1 - 3)
  - 3 Hours Social & Behavioral Science
  - 3 Hours Area V Charger Foundations Course

Year 3

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ED301 - INTRO TO EDUCATION PRACTICUM (0)
    - ED307 - MULTICULTURAL FND EDUCATION (3)
    - ED308 - EDUCATIONAL PSYCHOLOGY (3)
    - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
    - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - 3 Hours Literature Elective (EH 300+ or 400+ Course)

Spring

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- 12 hours from:

- ED309 - CLASSROOM & BEHAVIOR MGMT (3)
- ED350 - TECHNOLOGY IN CLASSROOM (3)
- EH305 - INTRO TO LITERARY STUDIES (3)

Year 4

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No Rules

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## English (MA)

### Program Description

Students wishing to pursue graduate work in English have a number of choices. The English MA Program includes both a thesis and a non-thesis option. Additionally, we offer several certificates that prepare graduates to pursue professional opportunities in technical writing or user experience, and teaching in English. Students are encouraged to consult with the Director of Graduate Studies to select the program that best meets their needs.

### Number of Credit Hours

33

### Degree Requirements

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.
- Graduate School Masters Requirements
  - Complete all of the following
    - Master's Transfer Credits
      - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
    - Complete 1 of the following
      - Non-Thesis
        - 30 semester hours of graduate coursework.
      - Thesis
        - Complete all of the following
          - 24 semester hours of graduate course work
          - 6 credit hours of thesis coursework (699)
          - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
          - A thesis approved by the supervisory committee.

## English (MA) - Education (Concentration)

### Description

The MA in English with a concentration in Education leads to Class A Teaching Certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### Concentration Requirements

English Requirements

24 Total Credits

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- Complete all of the following
  - 12 hours from any EH 600 - level course(s)
  - 6 hours from any EH 500 - 600 level course(s)
  - 3 hours from:
    - EH500 - COMPOSITION STUDIES TCHRS (3)
    - EH601 - ACTION RESCH WRITING STUDIES (3)
  - 3 hours from:
    - ESL510 - INTRO TO LANGUAGE SYSTEMS (3)
    - ESL520 - INSTR & ACADEMIC LANG CONT DOM (3)

Education Requirements

29 Total Credits

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- 29 hours from:
  - ED501 - INTRO TO EDUCATION
  - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
  - ED521 - SECNDRY ELA INSTR WRIT TO READ (2 - 3)
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - ED604 - CONTRIBUTION PSY TO EDUC (3)
  - ED607 - EDU LEADER AS EVALUATOR (3)
  - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
  - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
  - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)

Grand Total Credits: **53**

## English (MA) - English, General (Concentration)

### Description

The MA in English with a General concentration is the path for students pursuing the degree without also pursuing a teaching credential. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/english>.

## **Concentration Requirements**

### Core Requirements

27 Total Credits

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- 27 hours from any EH 500 - 600 level course(s)

### Thesis/Non-Thesis Requirements

6 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 6 hours from:
        - EH699 - MASTER'S THESIS (0 - 6)
      - If not finished with the thesis at the end of six hours, additional thesis hours may be taken subject to the rules about time-to-completion of the degree. Thesis hours must be taken during the semester in which a student defends and completes the thesis, and during any other semester in which the advisor's assistance is required. For more on the thesis, contact the Director of English Graduate Studies.
  - Non-Thesis Seeking Students
    - Complete all of the following
      - 6 hours from any EH 500 - 600 level course(s)
    - Capstone Requirements
      - Complete all of the following
        - The Capstone project should be completed in a student's final semester of the M.A. program. The Capstone project typically consists of the expansion of a paper or major project originally completed in an M.A. course. The project is typically framed toward a professional goal (academic conference presentation or academic journal publication, work application portfolio, creative writing publication, etc.). A graduate student will choose a Capstone director and develop goals and a completion plan for the project. Capstone project department deadlines:
        - 1. Selection of supervisor: December 1 (for Spring graduation); May 1 (for Fall graduation)
        - 2. Submission of Non-Thesis Capstone Proposal: January 20 (for Spring graduation); August 20 (for Fall graduation). The proposal will be subject to revision at this point, but should be finalized as an acceptable plan NO LATER THAN two weeks after initial submission (to allow time for the work to be completed).
        - 3. Submission of completed Non-Thesis Capstone Project: March 15 (for Spring graduation); October 20 (for Fall graduation)
        - The Capstone project concludes with an interview about the project's process by the chair of the Capstone and a second, appointed department faculty member. See the Graduate School information page for final Capstone (non-thesis) project deadlines. For more information contact the Director of English Graduate Studies. Please be advised that since most faculty members are on nine-month contracts and thus not employed by the university during the summer, it is usually not possible to schedule thesis defenses between mid-May and mid-August.

Grand Total Credits: **33**

## **English (MA) - Language Arts (Concentration)**

## **English (Minor)**

### **Program Description**

A minor in English requires 21 semester hours above freshman composition courses; 12 semester hours must be upper level (numbered 300 or above), including at least 3 semester hours at the 400-level.

- 25% of the minor must be earned at UAH
- A minimum 2.0 GPA is required in the minor
- Six semester hours of upper level credit must be taken at UAH

### **Number of Credit Hours**

21

### **Minor Requirements**

Sophomore Literature

- Complete all of the following
  - Earned at least 2 of the following:
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - Complete
    - EH305 - INTRO TO LITERARY STUDIES (3)
  - 6 hours from any EH 300 - 400 level course(s)
  - 3 hours from any EH 400 - level course(s)
  - 3 hours from any EH 200 - 400 level course(s)
  - Courses in technical and business writing may not be used in the minor without special approval by the department chair.

Grand Total Credits: **21**



## Film and Media Arts (Minor)

### Program Description

The minor in Film & Media Arts offers a variety of subjects for students interested in video and media production technologies, including live event and broadcast studio production. This program combines both production and film studies for a unique offering at UAH where students can ultimately earn certification in a variety of production roles. It is flexible in its structure, allowing students to engage in courses that combine skills and interests, such as sound and music technology or animation, with video production remaining the core focus. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/theatre/programs/film-media-arts>.

### Number of Credit Hours

21

### Degree Requirements

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### Minor Requirements

Core Courses

12 Total Credits

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- Complete
  - TH123 - INTRO TO FILM STUDIES (3)
  - Course Not Found
  - TH260 - VIDEO PRODUCTION (3)
  - TH330 - STAGE MANAGEMENT (3)
  - TH431 - SENIOR CAPSTONE THEATRE (3)

Electives

6 Total Credits

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- Complete all of the following
  - 6 hours from:
    - FMA340 - SP TOPICS FILM & MEDIA ARTS (3)
    - FMA360 - ADV VIDEO PRODUCTION (3)
    - FMA401 - INTERNSHIP IN VIDEO (3)
    - MU305 - MUSIC TECHNOLOGY III (3)
  - Additional courses such as FMA 375 - Documentary Film Production, FMA 315 - Live Sound, and FMA 460 - Video III/Broadcast could be offered as additional elective options. Please speak with a College of Arts, Humanities, and Social Sciences Academic Advisor to use these courses to fulfill elective requirements for this minor.

Grand Total Credits: **18**

## **Foreign Language French (Minor)**

### **Program Description**

The minor in French focuses on developing the four essential language skills of reading, writing, listening, and speaking as applied in French. The language skills and cultural competency found in this minor provide significant advantages for students preparing for today's global and competitive professional marketplace. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### **Number of Credit Hours**

24

### **Minor Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC301F - CONVERSATION:FRENCH (3)
    - WLC302F - COMPOSITION:FRENCH (3)
    - WLC303F - FOREIGN LANG LIFE & PROF:FRENC (3)
  - Earned at least 1 of the following:
    - WLC304F - CULTURE:FRENCH (3)
    - WLC305F - INTRO TO LITERATURE:FRENCH (3)

Grand Total Credits: **24**

## Foreign Language German (Minor)

### Program Description

The minor in German focuses on developing the four essential language skills of reading, writing, listening, and speaking as applied in German. The language skills and cultural competency found in this minor provide significant advantages for students preparing for today's global and competitive professional marketplace. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### Number of Credit Hours

24

### Minor Requirements

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC301G - CONVERSATION:GERMAN (3)
    - WLC302G - COMPOSITION:GERMAN (3)
    - WLC305G - INTRO TO LITERATURE:GERMAN (3)
  - Earned at least 1 of the following:
    - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
    - WLC304G - CULTURE:GERMAN (3)
    - WLC404G - TEXTS & CONTEXTS:SEM LIT/GERMA (3)

Grand Total Credits: **24**

## Foreign Language Russian (Minor)

### Program Description

The minor in Russian focuses on developing the four essential language skills of reading, writing, listening, and speaking as applied in Russian. The language skills and cultural competency found in this minor provide significant advantages for students preparing for today's global and competitive professional marketplace. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### Number of Credit Hours

24

### Minor Requirements

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC301R - CONVERSATION:RUSSIAN (3)
    - WLC302R - COMPOSITION:RUSSIAN (3)
    - WLC305R - INTRO TO LITERATURE:RUSSIAN (3)
  - Earned at least 1 of the following:
    - WLC303R - FOREIGN LANG LIFE & PROF:RUSSI (3)
    - WLC304R - CULTURE:RUSSIAN (3)
    - WLC404R - TEXTS & CONTEXTS:SEM LIT:RUSSI (3)

Grand Total Credits: **24**

## **Foreign Language Spanish (Minor)**

### **Program Description**

The minor in Spanish focuses on developing the four essential language skills of reading, writing, listening, and speaking as applied in Spanish. The language skills and cultural competency found in this minor provide significant advantages for students preparing for today's global and competitive professional marketplace. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### **Number of Credit Hours**

24

### **Minor Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
    - WLC102S - INTRO FOREIGN LANG II: SPANISH (3)
    - WLC201S - INTERM FOREIGN LANG: SPANISH (3)
    - WLC202S - INTERM FOREIGN LANG II: SPANISH (3)
    - WLC301S - CONVERSATION: SPANISH (3)
    - WLC302S - COMPOSITION: SPANISH (3)
    - WLC305S - INTRO TO LITERATURE: SPANISH (3)
  - Earned at least 1 of the following:
    - WLC303S - FOREIGN LANG LIFE & PROF: SPANI (3)
    - WLC304S - CULTURE: SPANISH (3)
    - WLC404S - TEXTS & CONTEXTS: SEM LIT: SPANI (3)

Grand Total Credits: **24**

## **Foreign Languages (BA)**

### **Program Description**

The BA in Foreign Language engages majors with the language, culture, literature, and professional applications of the chosen language. Majors can complete a degree with an education concentration, a language concentration (French, German, Russian, or Spanish), or an international trade concentration (French, German, Russian, or Spanish). For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### **Number of Credit Hours**

120

## **Degree Requirements**

### Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)

- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
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  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
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  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)



- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

8 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 7 hours from the following:  
Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Grand Total Credits: **8**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)

- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - WLC101MS - INTRO TO MEDICAL SPANISH (3)
- 3 hours from:
  - EH101 - COLLEGE WRITING I (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)
- Earned at least 1 of the following:
  - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - HON101 - INTRO TO HONORS RESEARCH (1)
- 3 Hours Mathematics
- 3 Hours Fine Art

Spring

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- Complete all of the following
  - 3 hours from:
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Humanities
  - 3 Hours Social & Behavioral Science
  - 4 Hours Lab Science

Year 2

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Fall

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- Complete all of the following
  - 3 hours from:
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 3 hours from:
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
  - 3 hours from:
    - WLC204 - INTERNATIONAL CINEMA (3)

- 3 hours from:
  - HY103 - WORLD HISTORY TO 1500 (3)
  - HY104 - WORLD HISTORY SINCE 1500 (3)
- 3 Hours Area V Charger Foundations Course
- 3 Hours Literature or Humanities

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - WLC301F - CONVERSATION:FRENCH (3)
    - WLC301G - CONVERSATION:GERMAN (3)
    - WLC301R - CONVERSATION:RUSSIAN (3)
    - WLC301S - CONVERSATION:SPANISH (3)
  - 3 hours from:
    - WLC303F - FOREIGN LANG LIFE & PROF:FRENC (3)
    - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
    - WLC303R - FOREIGN LANG LIFE & PROF:RUSSI (3)
    - WLC303S - FOREIGN LANG LIFE & PROF:SPANI (3)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - WLC302F - COMPOSITION:FRENCH (3)
    - WLC302G - COMPOSITION:GERMAN (3)
    - WLC302R - COMPOSITION:RUSSIAN (3)
    - WLC302S - COMPOSITION:SPANISH (3)
  - 3 hours from:
    - WLC304F - CULTURE:FRENCH (3)
    - WLC304G - CULTURE:GERMAN (3)
    - WLC304R - CULTURE:RUSSIAN (3)
    - WLC304G - CULTURE:GERMAN (3)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - WLC305F - INTRO TO LITERATURE:FRENCH (3)
    - WLC305G - INTRO TO LITERATURE:GERMAN (3)
    - WLC305F - INTRO TO LITERATURE:FRENCH (3)
    - WLC305S - INTRO TO LITERATURE:SPANISH (3)
  - 3 Hours Minor Course

- 3 Hours Minor Course
- 3 Hours General Elective
- 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - WLC404F - TEXTS & CONTEXTS:SEM LIT:FRENC (3)
    - WLC404G - TEXTS & CONTEXTS:SEM LIT/GERMA (3)
    - WLC404R - TEXTS & CONTEXTS:SEM LIT:RUSSI (3)
    - WLC404S - TEXTS & CONTEXTS:SEM LIT:SPANI (3)
  - 3 hours from:
    - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
    - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)
  - 3 Hours Minor Course
  - 3 Hours General Elective
  - 3 Hours General Elective

## **Foreign Languages (BA) - Foreign Language International Trade German (Concentration)**

### **Description**

The BA in Foreign Languages with a German concentration in Foreign Language International Trade is an interdisciplinary program that combines major coursework in German with coursework related to international trade. The program requires coursework in macroeconomics, accounting, statistics, finance, marketing, management, and international relations in addition to language. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

## **Concentration Requirements**

### Major Requirements

63 - 67 Total Credits

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- Complete all of the following
  - Language Courses
    - Complete all of the following
      - Complete
        - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
        - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
        - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
        - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
        - WLC204 - INTERNATIONAL CINEMA (3)
        - WLC301G - CONVERSATION:GERMAN (3)
        - WLC302G - COMPOSITION:GERMAN (3)
        - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
        - WLC304G - CULTURE:GERMAN (3)
        - WLC305G - INTRO TO LITERATURE:GERMAN (3)
        - WLC404G - TEXTS & CONTEXTS:SEM LIT/GERMA (3)
      - Earned at least 1 of the following:
        - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
        - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)

### Concentration Courses

- Complete all of the following
  - Complete
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - FIN454 - INTERNATIONAL FINANCE (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
  - Statistics
    - Complete 1 of the following
      - Complete
        - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
        - SOC304 - STATISTICS LAB (1)
      - Complete
        - MSC287 - BUSINESS STATISTICS I (3)

### General Electives

8 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 8
  - Elective hours vary by program, see advisor.

Grand Total Credits: **71 - 75**

## **Foreign Languages (BA) - Foreign Language International Trade Russian (Concentration)**

## **Description**

The BA in Foreign Languages with a Russian concentration in Foreign Language International Trade is an interdisciplinary program that combines major coursework in Russian with coursework related to international trade. The program requires coursework in macroeconomics, accounting, statistics, finance, marketing, management, and international relations in addition to language. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

## **Concentration Requirements**

### Major Requirements

63 - 67 Total Credits

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- Complete all of the following
  - Language Courses
    - Complete all of the following
      - Complete
        - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
        - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
        - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
        - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
        - WLC204 - INTERNATIONAL CINEMA (3)
        - WLC301R - CONVERSATION:RUSSIAN (3)
        - WLC302R - COMPOSITION:RUSSIAN (3)
        - WLC303R - FOREIGN LANG LIFE & PROF:RUSSI (3)
        - WLC304R - CULTURE:RUSSIAN (3)
        - WLC305R - INTRO TO LITERATURE:RUSSIAN (3)
        - WLC404R - TEXTS & CONTEXTS:SEM LIT:RUSSI (3)
      - Earned at least 1 of the following:
        - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
        - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)

### Concentration Courses

- Complete all of the following
  - Complete
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - FIN454 - INTERNATIONAL FINANCE (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
  - Statistics
    - Complete 1 of the following
      - Complete
        - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
        - SOC304 - STATISTICS LAB (1)
      - Complete
        - MSC287 - BUSINESS STATISTICS I (3)

### General Electives

8 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 8
  - Elective hours vary by program, see advisor.

Grand Total Credits: **71 - 75**

## **Foreign Languages (BA) - Foreign Language International Trade Spanish (Concentration)**

### **Description**

The BA in Foreign Languages with a Spanish concentration in Foreign Language International Trade is an interdisciplinary program that combines major coursework in Spanish with coursework related to international trade. The program requires coursework in macroeconomics, accounting, statistics, finance, marketing, management, and international relations in addition to language. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.



## **Concentration Requirements**

### Major Requirements

63 - 67 Total Credits

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- Complete all of the following
  - Language Courses
    - Complete all of the following
      - Complete
        - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
        - WLC102S - INTRO FOREIGN LANG II: SPANISH (3)
        - WLC201S - INTERM FOREIGN LANG: SPANISH (3)
        - WLC202S - INTERM FOREIGN LANG II: SPANISH (3)
        - WLC204 - INTERNATIONAL CINEMA (3)
        - WLC301S - CONVERSATION: SPANISH (3)
        - WLC302S - COMPOSITION: SPANISH (3)
        - WLC303S - FOREIGN LANG LIFE & PROF: SPANISH (3)
        - WLC304S - CULTURE: SPANISH (3)
        - WLC305S - INTRO TO LITERATURE: SPANISH (3)
        - WLC404S - TEXTS & CONTEXTS: SEM LIT: SPANISH (3)
      - Earned at least 1 of the following:
        - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
        - WLC410 - INT'L INTERN: COMP LANG/CULT (3 - 6)
  - Concentration Courses
    - Complete all of the following
      - Complete
        - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
        - FIN301 - PRINCIPLES OF FINANCE (3)
        - FIN454 - INTERNATIONAL FINANCE (3)
        - MGT301 - MANAGING ORGANIZATIONS (3)
        - MGT450 - INTERNATIONAL BUSINESS (3)
        - MKT301 - PRINCIPLES OF MARKETING (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
    - Statistics
      - Complete 1 of the following
        - Complete
          - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
          - SOC304 - STATISTICS LAB (1)
        - Complete
          - MSC287 - BUSINESS STATISTICS I (3)

### General Electives

8 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 8
  - Elective hours vary by program, see advisor.

Grand Total Credits: **71 - 75**

## Foreign Languages (BA) - Foreign Language, German (Concentration)

### Description

The BA in Foreign Language with a German concentration is the German version of this degree. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### Concentration Requirements

Major Requirements

36 - 39 Total Credits

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- Complete all of the following
  - Complete
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
    - WLC301G - CONVERSATION:GERMAN (3)
    - WLC302G - COMPOSITION:GERMAN (3)
    - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
    - WLC304G - CULTURE:GERMAN (3)
    - WLC305G - INTRO TO LITERATURE:GERMAN (3)
    - WLC404G - TEXTS & CONTEXTS:SEM LIT/GERMA (3)
  - Earned at least 1 of the following:
    - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
    - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

17 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 17
  - Elective hours vary by program, see advisor.

Grand Total Credits: **71 - 74**

## Foreign Languages (BA) - Foreign Language, Russian (Concentration)

### Description

The BA in Foreign Language with a Russian concentration is the Russian version of this degree. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### Concentration Requirements

Major Requirements

36 - 39 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
    - WLC301R - CONVERSATION:RUSSIAN (3)
    - WLC302R - COMPOSITION:RUSSIAN (3)
    - WLC303R - FOREIGN LANG LIFE & PROF:RUSSI (3)
    - WLC304R - CULTURE:RUSSIAN (3)
    - WLC305R - INTRO TO LITERATURE:RUSSIAN (3)
    - WLC404R - TEXTS & CONTEXTS:SEM LIT:RUSSI (3)
  - Earned at least 1 of the following:
    - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
    - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)

Minor Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from the following:  
Minor

General Electives

17 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 17
  - Elective hours vary by program, see advisor.

Grand Total Credits: **71 - 74**

## Foreign Languages (BA) - Foreign Language, Spanish (Concentration)

### Description

The BA in Foreign Language with a Spanish concentration is the Spanish version of this degree. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages>.

### Concentration Requirements

Major Requirements

36 - 39 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
    - WLC301S - CONVERSATION:SPANISH (3)
    - WLC302S - COMPOSITION:SPANISH (3)
    - WLC303S - FOREIGN LANG LIFE & PROF:SPANI (3)
    - WLC304S - CULTURE:SPANISH (3)
    - WLC305S - INTRO TO LITERATURE:SPANISH (3)
    - WLC404S - TEXTS & CONTEXTS:SEM LIT:SPANI (3)
  - Earned at least 1 of the following:
    - WLC409 - SR SEM: COMPARATIVE LANG & CUL (3)
    - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)

Minor Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from the following:  
Minor

General Electives

17 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 17
  - Elective hours vary by program, see advisor.

Grand Total Credits: **71 - 74**

## Game Design and Development (Minor)

### Program Description

The minor in Game Design & Development is a multidisciplinary minor for students interested in exposure to the full video game production pipeline. Students will learn the technical tools, design, critical thinking, communication, collaboration, and analytical skills necessary in the production of video games from faculty in Art, Art History, & Design; Computer Science; English; and Music: and will be able to understand and effectively communicate among disciplines. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/game-design-and-development-minor>.

**Number of Credit Hours**

30

**Degree Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - (ARS 220, MU 305, MU 306 ARS 210) Listed prerequisites are not required for GDD minors taking this course. Please contact academic advising office or [vinny.argentina@uah.edu](mailto:vinny.argentina@uah.edu) for registration overrides.

## **Minor Requirements**

### Game Computing

9 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least 1 of the following:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
  - Complete
    - CS121 - COMPUTER SCIENCE I (3)
  - Earned at least 1 of the following:
    - ARS311 - GAME DESIGN: SCRIPTING & DES I (3)
    - CS347 - INTRO VIDEO GAME DESGN & PROGM (3)

### Game Animation

9 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - ARS220 - ANIMATION: INTRODUCTION (3)
  - 6 hours from:
    - ARS321 - ANIMATION: ORGANIC MODELING (3)
    - ARS322 - ANIMATION: 3D ANIMATION (3)
    - ARS324 - ANIMATION: TECHNICAL ARTS (3)
    - ARS325 - ANIMATION: HARD SURF MODELING (3)
    - ARS329 - ANIMATION: 2D ANIMATION (3)
    - ARS416 - ANIMATION: TEAM GAME DESN II (3)

### Game Sound

3 Total Credits

*keyboard\_arrow\_up*

- Earned at least 1 of the following:
  - MU305 - MUSIC TECHNOLOGY III (3)
  - MU306 - MUSIC TECHNOLOGY IV (3)

### Game Design

9 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - ARS210 - GAME DESIGN: INTRODUCTION (3)
    - ARS415 - ANIMATION: TEAM GAME DESN I (3)
  - Earned at least 1 of the following:
    - EH301 - TECHNICAL WRITING (3)
    - EH442 - USABILITY STUDIES (3)
    - EH454 - NEW MEDIA WRITING & RHETORIC (3)

Grand Total Credits: **30**

## **Global Professional Pathways (Certificate)**

### **Program Description**

The certificate in Global Professional Pathways (GPP) provides students a clear path to combine foreign language study with experiential learning abroad opportunities such as internships, co-ops, and research opportunities. This combination will help students build the competency and confidence to be effective in their chosen career fields and to contribute to the performance of companies and employers in a global context. The GPP certificate is available in French, German, Russian, and Spanish. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>

### **Number of Credit Hours**

16

### **Degree Requirements**

Certificate Requirements

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- Complete all of the following
  - All world language coursework must be done in a single language.
  - At least three courses must be taken at UAH.
  - Average grade of B or higher is required for all language courses, and a grade of B or higher for GS 200 and GS 450.

## **Global Professional Pathways (Certificate) - Foreign Language - Arabic (Concentration)**

### **Description**

The graduate certificate in Global Professional Pathways with an Arabic concentration is the Arabic version of this certificate. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>.

### **Concentration Requirements**

Core Requirements

13 Total Credits

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- 13 hours from:
  - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
  - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
  - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
  - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
  - GS450 - GLOBAL PROFESSIONAL PORTFOLIO (1)

Additional Requirements

3 Total Credits

*keyboard\_arrow\_up*

- 3 hours from:
  - GS200 - GLOBAL SYSTEMS AND CULTURES (3)

Grand Total Credits: **16**

## **Global Professional Pathways (Certificate) - Foreign Language - French (Concentration)**

### **Description**

The graduate certificate in Global Professional Pathways with a French concentration is the French version of this certificate. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>.

### **Concentration Requirements**

Core Requirements

13 Total Credits

*keyboard\_arrow\_up*

- 13 hours from:
  - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
  - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
  - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
  - GS450 - GLOBAL PROFESSIONAL PORTFOLIO (1)

Additional Requirements

3 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - WLC Major or Minor Students
    - 3 hours from:
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
  - Non-WLC Major or Minor Students
    - 3 hours from:
      - WLC301F - CONVERSATION:FRENCH (3)
      - WLC302F - COMPOSITION:FRENCH (3)
      - WLC303F - FOREIGN LANG LIFE & PROF:FRENC (3)
      - WLC304F - CULTURE:FRENCH (3)
      - WLC305F - INTRO TO LITERATURE:FRENCH (3)

Grand Total Credits: **16**



## **Global Professional Pathways (Certificate) - Foreign Language - German (Concentration)**

### **Description**

The graduate certificate in Global Professional Pathways with a German concentration is the German version of this certificate. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>.

### **Concentration Requirements**

Core Requirements

13 Total Credits

*keyboard\_arrow\_up*

- 13 hours from:
  - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
  - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
  - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
  - GS450 - GLOBAL PROFESSIONAL PORTFOLIO (1)

Additional Requirements

3 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - WLC Major or Minor Students
    - 3 hours from:
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
  - Non-WLC Major or Minor Students
    - 3 hours from:
      - WLC301G - CONVERSATION:GERMAN (3)
      - WLC302G - COMPOSITION:GERMAN (3)
      - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
      - WLC304G - CULTURE:GERMAN (3)
      - WLC305G - INTRO TO LITERATURE:GERMAN (3)

Grand Total Credits: **16**

## **Global Professional Pathways (Certificate) - Foreign Language - Japanese (Concentration)**

### **Description**

The graduate certificate in Global Professional Pathways with a Japanese concentration is the Japanese version of this certificate. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>.

### **Concentration Requirements**

Core Requirements

13 Total Credits

*keyboard\_arrow\_up*

- 13 hours from:
  - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
  - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
  - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
  - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
  - GS450 - GLOBAL PROFESSIONAL PORTFOLIO (1)

Additional Requirements

3 Total Credits

*keyboard\_arrow\_up*

- 3 hours from:
  - GS200 - GLOBAL SYSTEMS AND CULTURES (3)

Grand Total Credits: **16**

## **Global Professional Pathways (Certificate) - Foreign Language - Russian (Concentration)**

### **Description**

The graduate certificate in Global Professional Pathways with a Russian concentration is the Russian version of this certificate. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>.

### **Concentration Requirements**

Core Requirements

13 Total Credits

*keyboard\_arrow\_up*

- 13 hours from:
  - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
  - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
  - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
  - GS450 - GLOBAL PROFESSIONAL PORTFOLIO (1)

Additional Requirements

3 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - WLC Major or Minor Students
    - 3 hours from:
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
  - Non-WLC Major or Minor Students
    - 3 hours from:
      - WLC301R - CONVERSATION:RUSSIAN (3)
      - WLC302R - COMPOSITION:RUSSIAN (3)
      - WLC303R - FOREIGN LANG LIFE & PROF:RUSSI (3)
      - WLC304R - CULTURE:RUSSIAN (3)
      - WLC305R - INTRO TO LITERATURE:RUSSIAN (3)

Grand Total Credits: **16**

## **Global Professional Pathways (Certificate) - Foreign Language - Spanish (Concentration)**

### **Description**

The graduate certificate in Global Professional Pathways with a Spanish concentration is the Spanish version of this certificate. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/world-languages/programs/certificates-other-courses#flge>.

### **Concentration Requirements**

Core Requirements

13 Total Credits

*keyboard\_arrow\_up*

- 13 hours from:
  - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - WLC102S - INTRO FOREIGN LANG II: SPANISH (3)
  - WLC201S - INTERM FOREIGN LANG: SPANISH (3)
  - WLC202S - INTERM FOREIGN LANG II: SPANISH (3)
  - GS450 - GLOBAL PROFESSIONAL PORTFOLIO (1)

Additional Requirements

3 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - WLC Major or Minor Students
    - 3 hours from:
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
  - Non-WLC Major or Minor Students
    - 3 hours from:
      - WLC301S - CONVERSATION: SPANISH (3)
      - WLC302S - COMPOSITION: SPANISH (3)
      - WLC303S - FOREIGN LANG LIFE & PROF: SPANISH (3)
      - WLC304S - CULTURE: SPANISH (3)
      - WLC305S - INTRO TO LITERATURE: SPANISH (3)

Grand Total Credits: **16**

## **Global Studies (Minor)**

### **Program Description**

The minor in Global Studies provides students a multi- and interdisciplinary minor that helps them prepare for global-oriented careers in business, government, non-governmental organizations, international development organizations, and philanthropic agencies. The Global Studies Program fosters an interdisciplinary environment of investigation of global issues that enables students to discover, create, and communicate knowledge, develop critical thinking and intercultural competencies, and cultivate civic responsibility in preparation for opportunities in a wide array of globally-oriented fields. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/global-studies>.

### **Number of Credit Hours**

21

## **Degree Requirements**

- Complete all of the following
  - Earned a minimum cumulative GPA of 2.0
  - 25% of the minor must be earned at UAH.
  - 6 credits may count toward Charger Foundations.
  - At least nine hours must be in courses numbered 300 or above.

## **Minor Requirements**

Global Studies Core

6 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
    - GS400 - GLOBAL STUDIES CAPSTONE (3)
  - GS 400 is to be taken in last year of program.

World Language Core

6 Total Credits

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- Complete all of the following
  - 6 hours from:
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    - Area II: Humanities and Fine Arts - WLC 101
      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
      - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
      - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
      - WLC101MS - INTRO TO MEDICAL SPANISH (3)
      - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
      - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- The 6 Hours of world language must be taken in the same language

Thematic Core Competency

9 Total Credits

Students choose one thematic competency and take three courses in that competency. Students, may, with approval of the Global Studies Program Coordinator, substitute courses in the competency.

- Complete 1 of the following
  - Global Economics, Markets, and Development
    - Complete all of the following
      - Students will acquire a foundational literacy in economics and economic development.
      - 9 hours from:
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
        - MGT450 - INTERNATIONAL BUSINESS (3)
        - ECN454 - INTERNATIONAL ECONOMICS (3)
        - FIN454 - INTERNATIONAL FINANCE (3)
        - ECN490 - SPECIAL PROJECTS (3)
        - HY383 - FOOD AND WORLD HISTORY (3)
        - PSC440 - REGIONAL STUDIES (3)
      - OR course approved by Global Studies Program Coordinator
    - Global Politics and Security
      - Complete all of the following
        - Students will examine and reflect on the complexities involved in global politics and security.
        - 9 hours from:
          - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
          - PSC260 - INTRO INTERNTL RELATIONS (3)
          - PSC440 - REGIONAL STUDIES (3)
          - PSC464 - AMERICAN FOREIGN POLICY (3)
          - PSC470 - ISSUES IN SECURITY POLICY (3)
          - HY383 - FOOD AND WORLD HISTORY (3)
          - HY473 - U.S.-LATIN AMERICAN RELATIONS (3)
          - HY475 - SECTARIANISM ISLAMIC WORLD (3)
        - OR course approved by Global Studies Program Coordinator
      - Global Environment, Technology, and Health
        - Complete all of the following
          - Students will explore the impact of the global processes of business, industry, and technological developments on the environment and public health.
          - 9 hours from:
            - AES210 - COLLAPSE OF CIVILIZATIONS (3)
            - AES407 - ENV THRTS, PUB POLY, & DEC MKG (3)
            - HY383 - FOOD AND WORLD HISTORY (3)
            - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
            - AES105 - WORLD REGIONAL GEOGRAPHY (3)
            - ECN461 - ECONOMIC DEVELOPMENT (3)
            - HY370 - TECHNOLOGY IN AMERICAN HISTORY (3)
          - OR course approved by Global Studies Program Coordinator
        - Cultures in Exchange and Contact
          - Complete all of the following
            - Students will investigate the challenges and opportunities in a world of continual migration and interaction of cultures, ideas, and ways of life.
            - 9 hours from:
              - ARH103 - ARH SUR: WORLD ART (3)
              - EH208 - READINGS LITERATURE/CULTURE 2 (3)
              - EH415 - ANGLOPHONE/POSTCOLONIAL LIT (3)
              - WLC204 - INTERNATIONAL CINEMA (3)
              - HY382 - MODERN LATIN AMERICAN (3)
              - HY385 - MODERN MIDDLE EAST (3)
              - HY424 - THE ATLANTIC WORLD (3)
              - HY481 - EMPIRES AND NATIONS (3)
              - PHL314 - ASIAN PHILOSOPHY (3)
              - SOC330 - RACE AND ETHNICITY (3)
            - OR course approved by Global Studies Program Coordinator

Grand Total Credits: **21**

## **History (BA)**

### **Program Description**

The BA in History is designed to have students learn to investigate questions about the past rigorously and critically. They identify strong sources, critically assess information, analyze disparate threads of information, weigh different interpretations, and identify and explain trends and patterns. The program provides grounding in our national past and patterns alongside world and regional histories that provide transnational and cosmopolitan perspectives. History students develop strong research and analytical skills and practice discussing complex topics and presenting information and conclusions clearly orally and in writing. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/history>.

### **Number of Credit Hours**

120

### **Degree Requirements**

Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)
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Area II: Humanities and Fine Arts - WLC 101
      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
      - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
      - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
      - WLC101MS - INTRO TO MEDICAL SPANISH (3)
      - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
      - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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Area II: Humanities and Fine Arts - WLC 102
      - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
      - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
      - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
      - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
      - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
      - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
      - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)

- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **History (BA) - Education (Concentration)**

**Description**

The BA in History with a concentration in Education is designed to teach students to investigate questions about the past rigorously and critically, identify strong sources, critically assess information, analyze disparate threads of evidence, and identify and explain trends and patterns. In addition to history classes, students complete education courses, where they learn best practices for sharing their historical skills and knowledge with students. For further information, please refer to the web site at <https://www.uah.edu/ahs/departments/history>.

## **Concentration Requirements**

### Area V (Pre-Professional) Requirements

18 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 17 hours from the following:  
Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

### Major Requirements

33 Total Credits

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- Complete all of the following
  - Complete
    - HY221 - UNITED STATES TO 1877 (3)
    - HY222 - UNITED STATES SINCE 1877 (3)
    - HY300 - CRAFT OF HISTORY (3)
    - HY325 - HISTORY OF ALABAMA (3)
    - HY490 - HISTORY CAPSTONE (3)
  - US History Courses
  - 3 hours from any HY 300 - 400 level course(s)
  - Non US History Courses
  - 6 hours from any HY 300 - 400 level course(s)
  - History Elective Courses
  - Complete all of the following
    - 6 hours from any HY 300 - 400 level course(s)
    - 3 hours from any HY 200 - 400 level course(s)
  - Notes
  - Complete all of the following
    - Students must take three History courses (9 semester hours) at the 400+ level.
    - No more than two classes from the following count toward the major: HY 310, HY 311, HY 312, HY 410, HY 492, HY 493, HY 494, or HY 495.
    - Students should take HY 300 in their Sophomore year or, for transfer students, in their first semester at UAH.
    - Students should take HY 490 in their Senior year.

### Education Requirements

38 - 39 Total Credits

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- Complete
  - ED301 - INTRO TO EDUCATION PRACTICUM (0)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - ED308 - EDUCATIONAL PSYCHOLOGY (3)
  - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
  - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
  - ED350 - TECHNOLOGY IN CLASSROOM (3)
  - ED408 - TCHG READING/CONTENT AREA (3)
  - ED410 - FOUNDATIONS EDUC EVALUAT (3)
  - ED424 - TCHNG SOC STUD MID & SEC SCH I (2 - 3)
  - ED497 - HIGH SCHOOL INTERNSHIP (12)

Grand Total Credits: **89 - 90**

## **History (BA) - History, General (Concentration)**

## **Description**

The BA in History with a General History Concentration prepares students to investigate questions about the past rigorously and critically. They identify strong sources, critically assess information, analyze disparate threads of information, weigh different interpretations, and identify and explain trends and patterns. Students are grounded in our national past and patterns alongside world and regional histories that provide transnational and cosmopolitan perspectives. History students develop strong research and analytical skills and practice discussing complex topics and presenting information and conclusions clearly orally and in writing. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/history>.

## **Concentration Requirements**

Area V (Pre-Professional) Requirements

14 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 10 hours from the following:  
Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Major Requirements

30 Total Credits

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- Complete all of the following
  - Complete

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)
- HY300 - CRAFT OF HISTORY (3)
- HY490 - HISTORY CAPSTONE (3)

#### US History Courses

- 6 hours from any HY 300 - 400 level course(s)

#### Non US History Courses

- 6 hours from any HY 300 - 400 level course(s)

#### History Electives

- 6 hours from any HY 300 - 400 level course(s)

#### Notes

- Complete all of the following
  - Students must take three History courses (9 semester hours) at the 400 level within the HY major.
  - No more than two classes from the following count toward the major: HY 310, HY 311, HY 312, HY 410, HY 492, HY 493, HY 494, or HY 495.
  - Students should take HY 300 in their Sophomore year or, for transfer students, in their first semester at UAH.
  - Students should take HY 490 in their Senior year.

#### Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

#### General Electives

17 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 17
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **79**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics
  - 3 Hours Fine Art
  - 3 Hours History

Spring

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- Complete all of the following

- 3 hours from:
  - HY104 - WORLD HISTORY SINCE 1500 (3)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 4 Hours Lab Science
- 3 Hours Humanities
- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 6 hours from:
    - HY221 - UNITED STATES TO 1877 (3)
    - HY300 - CRAFT OF HISTORY (3)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 4 Hours Lab Science
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 3 hours from:
    - HY222 - UNITED STATES SINCE 1877 (3)
  - 3 Hours Humanities or 2nd Literature
  - 3 Hours Social & Behavioral Science
  - 6 Hours Area V Charger Foundations Courses

Year 3

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Fall

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- Complete all of the following
  - 6 Hours History Electives (HY 300+ or 400+ Courses)
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 Hours History Electives (HY 300+ or 400+ Courses)
  - 6 Hours Minor Courses
  - 3 Hours Area V Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 6 Hours History Electives (HY 300+ or 400+ Courses)
  - 6 Hours Minor Courses
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - HY490 - HISTORY CAPSTONE (3)
  - 6 Hours Minor Courses
  - 6 Hours General Electives

## **History (BA) - JUMP: BA HY, History (MA)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BA in History to an MA in History is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

History (MA)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_HY@uah.edu

### **JUMP Landing (Graduate Program)**

MA\_History@uah.edu

### **JUMP Admission Requirements**

- Complete all of the following
  - Must have a class standing of Junior or higher
  - Complete
    - HY300 - CRAFT OF HISTORY (3)
  - Have completed at least 9 hours of history coursework at UAH, with at least 6 hours at the 300 level or above.

## **History (BA) - Social Science (Concentration)**

## **Description**

The BA in History with a concentration in Social Science is designed to teach students to investigate questions about the past rigorously and critically, identify strong sources, critically assess information, analyze disparate threads of evidence, and identify and explain trends and patterns. In addition to history classes, students complete education courses, where they learn best practices for sharing their historical skills and knowledge with students. For further information, please refer to the web site at <https://www.uah.edu/ahs/departments/history>.

## **Concentration Requirements**

### Area V (Pre-Professional) Requirements

1 Total Credits

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- Complete
  - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

### Major Requirements

33 Total Credits

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- Complete all of the following
  - Complete
    - HY221 - UNITED STATES TO 1877 (3)
    - HY222 - UNITED STATES SINCE 1877 (3)
    - HY300 - CRAFT OF HISTORY (3)
    - HY325 - HISTORY OF ALABAMA (3)
    - HY490 - HISTORY CAPSTONE (3)
  - US History Courses
    - 3 hours from any HY 300 - 400 level course(s)
  - Non US History Courses
    - 6 hours from any HY 300 - 400 level course(s)
  - History Elective Courses
    - Complete all of the following
      - 6 hours from any HY 300 - 400 level course(s)
      - 3 hours from any HY 200 - 400 level course(s)
  - Notes
    - Complete all of the following
      - Students should take three history courses (9 semester hours) at the 400+ level in the major.
      - No more than two classes from the following count toward the major: HY 310, HY 311, HY 312, HY 410, HY 492, HY 493, HY 494, or HY 495.
      - Students should take HY 300 in their Sophomore year or, for transfer students, in their first semester at UAH.
      - Students should take HY 490 in their Senior year.

### Social Science Requirements

30 Total Credits

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- Complete
  - AES105 - WORLD REGIONAL GEOGRAPHY (3)
  - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
  - ECN142 - PRINC OF MACROECONOMICS (3)
  - ECN143 - PRINC OF MICROECONOMICS (3)
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
  - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
  - PSC260 - INTRO INTERNTL RELATIONS (3)
  - PY101 - GENERAL PSYCHOLOGY I (3)
  - PY375 - SOCIAL PSYCHOLOGY (3)
  - SOC100 - INTRO TO SOCIOLOGY (3)

### Education Requirements

38 - 39 Total Credits

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- Complete
  - ED301 - INTRO TO EDUCATION PRACTICUM (0)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - ED308 - EDUCATIONAL PSYCHOLOGY (3)
  - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
  - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
  - ED350 - TECHNOLOGY IN CLASSROOM (3)
  - ED408 - TCHG READING/CONTENT AREA (3)
  - ED410 - FOUNDATIONS EDUC EVALUAT (3)
  - ED424 - TCHNG SOC STUD MID & SEC SCH I (2 - 3)
  - ED497 - HIGH SCHOOL INTERNSHIP (12)

Grand Total Credits: **102 - 103**

## History (MA)

### Program Description

The MA in History is designed to have students learn and practice skills used in a myriad of careers. Graduates learn to identify and track down legitimate sources, critically assess those sources, weigh different points of view and disparate pieces of information, and analyze their research as they identify trends and patterns. Students develop stronger skills in clearly presenting information orally and in writing. This program has students study regional histories, international relations, and comparative perspectives that give them insights into current issues and how policy decisions impact people, politics, economics, and cultures. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/history>.

### Number of Credit Hours

33

### Degree Requirements

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## History (MA) - Education (Concentration)

### Description

The MA in History with a concentration in Education leads to Class A Teaching certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students learn historical skills along with best practices of teaching to prepare them to share their historical knowledge in the classroom. Interested students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### Concentration Requirements

History Requirements

24 Total Credits

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- Complete all of the following
  - 3 hours from:
    - HY605 - INTRODUCTION TO HISTORIOGRAPHY (3)
  - 6 hours from any HY 600 - level course(s)
  - 15 hours from any HY 500 - 600 level course(s)

Education Requirements

9 Total Credits

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- 9 hours from any ED or EDC 600 - level course(s)

Grand Total Credits: **33**

## History (MA) - History, General (Concentration)

### Description

The MA in History with a General History concentration is designed so that students learn and practice skills used in a myriad of careers. Students learn to identify and track down legitimate sources, critically assess those sources, weigh different points of view and disparate pieces of information, and analyze their research as they identify trends and patterns. They develop stronger skills in clearly presenting information orally and in writing while studying regional histories, international relations, and comparative perspectives that give them insights into current issues and how policy decisions impact people, politics, economics, and cultures. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/history>.

### Concentration Requirements

Requirements

30 - 33 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 3 hours from:
        - HY605 - INTRODUCTION TO HISTORIOGRAPHY (3)
      - 9 hours from any HY 600 - level course(s)
      - 12 hours from any HY 500 - 600 level course(s)
      - 6 hours from:
        - HY699 - MASTER'S THESIS (1 - 3)
      - Reading proficiency in French, German, Latin, Russian, or Spanish. (Optional)
    - Non-Thesis Seeking Students
      - Complete all of the following
        - 3 hours from:
          - HY605 - INTRODUCTION TO HISTORIOGRAPHY (3)
        - 3 hours from:
          - HY590 - RESEARCH SEMINAR IN HISTORY (3)
        - 15 hours from any HY 600 - level course(s)
        - 12 hours from any HY 500 - 600 level course(s)

Grand Total Credits: **30 - 33**

## History (MA) - Social Science (Concentration)

### Concentration Requirements

Requirements

30 - 33 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 3 hours from:
        - HY605 - INTRODUCTION TO HISTORIOGRAPHY (3)
      - 9 hours from any HY 600 - level course(s)
      - 12 hours from any HY 500 - 600 level course(s)
      - 6 hours from:
        - HY699 - MASTER'S THESIS (1 - 3)
      - Reading proficiency in French, German, Latin, Russian, or Spanish. (Optional)
    - Non-Thesis Seeking Students
      - Complete all of the following
        - 3 hours from:
          - HY605 - INTRODUCTION TO HISTORIOGRAPHY (3)
        - 15 hours from any HY 600 - level course(s)
        - 15 hours from any HY 500 - 600 level course(s)
        - Oral and written comprehensive examination covering coursework. Students must demonstrate competency in at least two fields of history or complete HY698 and do an oral comprehensive exam covering their research and courses.

Grand Total Credits: **30 - 33**



## History (Minor)

### Program Description

The minor in History is designed to have students learn to investigate questions about the past rigorously and critically. They identify strong sources, critically assess information, analyze disparate threads of information, weigh different interpretations, and identify and explain trends and patterns. It provides grounding in our national past and patterns alongside world and regional histories that provide transnational and cosmopolitan perspectives. History students develop strong research and analytical skills and practice discussing complex topics and presenting information and conclusions clearly orally and in writing. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/history>.

### Number of Credit Hours

21

### Minor Requirements

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Sequence
  - Complete 1 of the following
    - Complete
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - Complete
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
  - 3 hours from any HY 200 - 400 level course(s)
  - 12 hours from any HY 300 - 400 level course(s)

Grand Total Credits: **21**

## History, Public (Minor)

### Program Description

The minor in Public History is an interdisciplinary minor designed for students who want to pursue public history jobs in historic preservation, museums, historic houses or historic sites, archives, libraries, art galleries, local historical museums, or in local or state government. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/history/programs/undergraduate>.

### Number of Credit Hours

21

### Minor Requirements

Minor Requirements

21 Total Credits

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- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### Public History Electives

6 Total Credits

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- 6 hours from:
  - HY310 - INTRODUCTION TO PUBLIC HISTORY (3)
  - HY311 - HISTORIC ARCHAEOLOGY (3)
  - HY312 - CULTURAL RESOURCE MANAGEMENT (3)
  - HY410 - SPEC TOPICS IN PUBLIC HISTORY (3)
  - HY492 - PUB MEMORY & INTERP (3)
  - HY493 - FUNDAMENTALS OF ARCHIVES (3)
  - HY494 - DEVELOPING DIGITAL ARCHIVES (3)
  - HY498 - STUDIES IN HISTORY (1 - 3)

### Interdisciplinary Electives

6 Total Credits

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- 6 hours from:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
  - CM113 - PUBLIC SPEAKING (3)
  - CM205 - INTRO TO JOURNALISM (3)
  - CM251 - DECISION-MAKING IN SMALL GROUP (3)
  - CM313 - BUSINESS & PROFESSIONAL COMM (3)
  - CM405 - ADVANCED MEDIA WRITING (3)
  - CM430 - MASS MEDIA IN AMERICA (3)
  - CM444 - ADVERTISING (3)
  - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
  - EH301 - TECHNICAL WRITING (3)
  - EH302 - TECHNICAL EDITING (3)
  - FMA260 - VIDEO PRODUCTION (3)
  - FMA360 - ADV VIDEO PRODUCTION (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - MKT342 - PROMOTIONAL STRATEGY (3)

### Cultural Electives

6 Total Credits

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- Complete 1 of the following
  - History Majors
    - Earned at least 6 credits from ARH, SOC, or PSC
  - Non-History Majors
    - Earned at least 6 credits from ARH, HY, SOC, or PSC

### Internship

3 Total Credits

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- 3 hours from:
  - ARS492 - ART INTERNSHIP (3)
  - HY495 - PUBLIC HISTORY INTERNSHIP (3)

Grand Total Credits: **21**

## **Intelligence and Security (Graduate Certificate)**

### **Program Description**

The graduate certificate in Intelligence and Security provides students who are working, seeking to work, or interested in the field of National Security with a credential that may be applied to the MA program in Public Affairs and Policy. This certificate focuses on strategies and political forces that contribute to how policymakers define national interests and form policies to strengthen national security. Students complete the program with an enhanced understanding of the dynamics and methodologies that inform U.S. national security policymaking. For further information, please refer to the department web site at

<https://www.uah.edu/ahs/departments/political-science/programs/international-security-policy-certificate>

### **Number of Credit Hours**

12

### **Major Requirements**

- Complete all of the following
  - Complete
    - PSC540 - REGIONAL STUDIES (3)
    - PSC562 - INTEL, SEC, & DECISION MAKING (3)
  - 3 hours from:
    - PSC566 - NATIONAL SECURITY STRGY & PLY (3)
    - PSC564 - AMERICAN FOREIGN POLICY (3)
  - 3 hours from:
    - PSC564 - AMERICAN FOREIGN POLICY (3)
    - PSC566 - NATIONAL SECURITY STRGY & PLY (3)
    - PSC570 - ISSUES IN SECURITY POLICY (3)
    - PSC601 - THE PUBLIC POLICY PROCESS (3)

Grand Total Credits: **12**

## **Justice & Equity Studies (Minor)**

### **Program Description**

The minor in Justice and Equity Studies focuses on a study of justice and equity that extends beyond the study of crime, law, and the criminal justice system, understanding that these are constitutive parts of larger issues of justice, conflict, and social change. As such, this minor situates conversations about justice and equity within an interdisciplinary framework that emphasizes historic, economic, political, and social contexts. The courses, taught by faculty from a broad range of disciplines, provide opportunities for students to grapple with key classical statements, evaluate empirical research, and propose policy solutions. Students who complete the minor will have learned knowledge and skills allowing them to pursue careers in law, public policy, social justice, criminal justice, and social services. For further information, please refer to the department website at <https://www.uah.edu/ahs/departments/minors> or email [jes@uah.edu](mailto:jes@uah.edu).

### **Number of Credit Hours**

21

## **Degree Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - 12 hours must be at 300-400 level.

## **Minor Requirements**

Core Group Requirements

9 Total Credits

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- Complete all of the following
  - Group 1
    - Earned at least 1 of the following:
      - PHL102 - INTRO TO ETHICS (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
  - Group 2
    - Earned at least 1 of the following:
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
  - Group 3
    - Earned at least 1 of the following:
      - EH243 - PROTEST LITERATURE (3)
      - PHL337 - PHILOSOPHY OF RACE (3)
      - SOC330 - RACE AND ETHNICITY (3)

Electives (no more than two electives from any discipline)

12 Total Credits

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- 12 hours from:
  - CM340 - SPEC TOPICS IN COMM ARTS (3)
  - CM430 - MASS MEDIA IN AMERICA (3)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - EH243 - PROTEST LITERATURE (3)
  - EH415 - ANGLOPHONE/POSTCOLONIAL LIT (3)
  - EH438 - AFRICAN AMERICAN LITERATURE (3)
  - Course Not Found
  - EH465 - DRAMATIC LITERATURE (3)
  - HY367 - WOMEN IN U.S. HISTORY (3)
  - HY473 - U.S.-LATIN AMERICAN RELATIONS (3)
  - HY475 - SECTARIANISM ISLAMIC WORLD (3)
  - HY476 - BEING YOUNG MODERN MIDDLE EAST (3)
  - HY482 - COMPTV SLAVERY & ABOLITION (3)
  - HY483 - GENDER & SEXUALITY LATIN AMERI (3)
  - HY485 - NAZI GERMANY AND THE HOLOCAUST (3)
  - PHL303 - CONTINENTAL PHILOSOPHY (3)
  - PHL310 - PHILOSOPHY OF ART (3)
  - PHL314 - ASIAN PHILOSOPHY (3)
  - PHL337 - PHILOSOPHY OF RACE (3)
  - PHL438 - CONTEMPORARY POLITICAL THOUGHT (3)
  - PSC436 - POLITICAL IDEOLOGIES (3)
  - PSC440 - REGIONAL STUDIES (3)
  - PSC451 - LAW, COURTS, & PUBLIC POLICY (3)

- PY201 - LIFE-SPAN DEVELOPMENT (3)
- PY434 - PSYCHOLOGY AND LAW (3)
- SOC306 - SOCIOLOGY OF GENDER (3)
- SOC320 - SOCIOLOGY OF RELIGION (3)
- SOC330 - RACE AND ETHNICITY (3)
- SOC350 - MONEY AND POWER (3)
- Course Not Found
- SOC382 - WHITE COLLAR CRIME (3)
- SOC384 - DRUGS AND SOCIETY (3)

Grand Total Credits: **21**

## **Music (BA)**

### **Program Description**

The BA in Music is accredited by the National Association of Schools of Music and is designed to

For further information, please refer to the department web site at  
<https://www.uah.edu/ahs/departments/music/degrees/undergraduate>

### **Number of Credit Hours**

120

### **Degree Requirements**

Degree Requirements  
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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

### **General Education (Charger Foundations) Requirements**

Charger Foundations  
 41 Total Credits  
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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition  
 6 Total Credits  
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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)

- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - EH103 - ACCELERATED COLLEGE WRITING (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 hours from the following:
    - Any General Elective

## Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Non-Literature

      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
      - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
      - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
      - WLC101MS - INTRO TO MEDICAL SPANISH (3)
      - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
      - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)

- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)



- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

4 - 10 Total Credits

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- Complete 1 of the following
  - Music Education Concentration Only
    - Complete
      - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
      - CM113 - PUBLIC SPEAKING (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
    - All other concentrations
      - Complete all of the following
        - Complete
          - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
        - 3 hours from:  
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Area II: Humanities and Fine Arts - WLC 101
          - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
          - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
          - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
          - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
          - WLC101MS - INTRO TO MEDICAL SPANISH (3)
          - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
          - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)  
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Area II: Humanities and Fine Arts - WLC 102
          - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
          - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
          - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
          - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
          - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
          - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
          - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - WLC 201
          - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
          - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
          - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
          - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
          - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
          - WLC201S - INTERM FOREIGN LANG:SPANISH (3)  
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Area II: Humanities and Fine Arts - WLC 202
          - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
          - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
          - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
          - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
          - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
          - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Grand Total Credits: **4 - 10**

## **Major Requirements**

Music Core

40 Total Credits

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- Complete all of the following

- Complete

- MU100 - INTRO TO MUSIC LITERATURE (3)
- MU106 - INTRO TO MUSIC TECHNOLOGY (1)
- MU311 - HISTORY OF MUSIC I (3)
- MU312 - HISTORY OF MUSIC II (3)
- MU325 - CONDUCTING (2)

Principal Instrument

- Complete all of the following

- 7.5 hours from any MUA 200 - 400 level course(s)
- Complete
  - MUA498 - SENIOR RECITAL (1.5)

Music Theory

- Complete

- MU201 - MUSIC THEORY I (3)
- MU202 - MUSIC THEORY II (3)
- MU203 - MUSICIANSHIP SKILLS I (1)
- MU204 - MUSICIANSHIP SKILLS II (1)
- MU301 - THEORY OF MUSIC III (3)
- MU303 - MUSICIANSHIP SKILLS III (1)

Ensembles

- Complete all of the following

- Earned at least 7 hours from:

Must include:

- MUX396 - CHAMBER ENSEMBLES (0.5)

Courses from MUX -

- 4 of the 7 hours should be conducted ensembles (MUX 390, MUX 391, MUX 392, MUX 393, or MUX 399).

Music Forum

- Complete all of the following

- Earned at least 7 of the following:

- MU199 - MUSIC FORUM

- Students must pass this course 7 times, transfer students must pass this course for every semester they are in enrolled as a Music major at UAH

Grand Total Credits: **40**

#### **4-Year Plan**

Year 1

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Music (BA) - Church Music (Concentration)**

### **Description**

The BA in Music with a concentration in Church Music benefits students with an interest in church music. The core of this emphasis is a traditional music degree with "classical" performance requirements. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### **Concentration Requirements**

Concentration Requirements

20 Total Credits

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- Complete all of the following
  - Complete
    - MU313 - SURVEY OF CHURCH MUSIC (3)
    - MU402 - CHURCH MUSIC METDS, MATRL & AD (3)
    - MU408 - INTERNSHIP CHURCH MUSIC (3)
    - MUA111 - STUDIO INSTR-VOICE (1)
    - MUA121 - STUDIO INSTR-ORGAN (1)
    - MUE328 - TEACHING GENERAL MUSIC (3)
    - PHL314 - ASIAN PHILOSOPHY (3)
  - Earned at least 1 of the following:
    - SOC375 - SOCIAL PSYCHOLOGY (3)
    - PY375 - SOCIAL PSYCHOLOGY (3)

General Electives

15 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 15
  - Elective hours vary by program, see advisor.

Grand Total Credits: **35**

## Music (BA) - Jazz (Concentration)

### Description

The BA in Music with a concentration in Jazz is designed for students desiring additional studies in jazz beyond the standard music major. The core of this concentration is a traditional music degree with "classical" performance requirements. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### Concentration Requirements

Concentration Requirements

25 Total Credits

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- Complete all of the following
  - 4.5 hours from any MUJ 200 - level course(s)
  - Complete
    - MUJ498 - SENIOR JAZZ RECITAL (1.5)
    - MUJ205 - JAZZ THEORY (2)
    - MU317 - JAZZ ARRANGING (2)
    - MUJ308 - JAZZ IMPROVISATION I (2)
    - MUJ309 - JAZZ IMPROVISATION II (2)
    - MU316 - HIST & APPRECIATION OF JAZZ (3)
- Ensemble
  - Complete all of the following
    - 2 hours from:
      - MUX386 - JAZZ CHAMBER ENSEMBLES (0.5)
    - 4 hours from:
      - MUX389 - UAH JAZZ ENSEMBLE (1)
- Studio Instruction
  - 2 hours from:
    - MUJ131 - JAZZ STUDIO INSTR-PIANO (1)

General Electives

10 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 10
  - Elective hours vary by program, see advisor.

Grand Total Credits: **35**

## **Music (BA) - JUMP: BA MU (Choral), Music Education - Choral (MAT PCH)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BA in Music with a Choral concentration to an MAT in P-12 - Music Education with a Choral concentration is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

P-12 Education (MAT)

### **Max Shared Hours**

10

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MU@uah.edu

### **JUMP Landing (Graduate Program)**

MAT\_P12Teaching@uah.edu

## **Music (BA) - JUMP: BA MU (Instrumental), Music Education - Instrumental (MAT PCH)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BA in Music with an Instrumental concentration to an MAT in P-12 - Music Education with an Instrumental concentration is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

P-12 Education (MAT)

### **Max Shared Hours**

10

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MU@uah.edu

### **JUMP Landing (Graduate Program)**

MAT\_P12Teaching@uah.edu



## **Music (BA) - Liberal Arts (Concentration)**

### **Description**

The BA in Music with a concentration in Liberal Arts allows for a traditional liberal arts education, with a minor or second major in another field. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### **Concentration Requirements**

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

17 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 17
  - Elective hours vary by program, see advisor.

Grand Total Credits: **35**

## Music (BA) - Music Business (Concentration)

### Description

The BA in Music with a concentration in Music Business is designed for students with dual interests in music and business. The core of this concentration is a traditional music degree with "classical" performance requirements. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### Concentration Requirements

Concentration Requirements

21 Total Credits

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- Complete all of the following
  - Complete
    - MU110 - INTRO ARTS MANAGEMENT (3)
    - MU407 - INTERNSHIP MUSIC BUSINESS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
  - Earned at least 2 of the following:
    - MGT101 - INTRO ENTREPRENEURSHIP (3)
    - MGT405 - NEW VENTURE STRATEGIES (3)
    - MKT315 - SALES MGT/PROF SELLING (3)
    - MKT420 - SERVICES MARKETING (3)

General Electives

14 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 14
  - Elective Hours vary by program; see advisor.

Grand Total Credits: **35**

## Music (BA) - Music Education (Concentration)

### Description

The BA in Music with a concentration in Music Education integrates music and professional education courses to develop a superior music teacher, certified to teach at all levels P-12 (Class B Professional Teacher's Certificate) with emphasis in either choral or instrumental music. Students must demonstrate throughout their course of study competencies in both performance and teaching. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### Concentration Requirements

Concentration Requirements

7 - 9 Total Credits

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- Complete 1 of the following
  - Please note that the State of Alabama requires a 2.5 GPA in the major for certification.  
Music Education - Voice
  - Complete all of the following
    - Secondary Instrument
      - Complete all of the following
        - 3 hours from:

- MUA111 - STUDIO INSTR-VOICE (1)
    - MUA131 - STUDIO INSTR-PIANO (1)
  - Earned at least 1 of the following:
    - MUA141 - STUDIO INSTR-GUITAR (1)
    - MUA151 - STUDIO INSTR-STRINGS (1)
  - Complete
    - MU322 - DICTION FOR SINGERS (2)
    - MUE428 - VOCAL/CHORAL METH SEC SCH (3)
- Music Education - Instrumental
- Complete all of the following
    - Secondary Instrument
      - Complete all of the following
        - (2 Woodwind, 2 Brass, 1 Percussion, 1 String minus principle instrument)
        - Earned at least 1 of the following:
          - MUA141 - STUDIO INSTR-GUITAR (1)
          - MUA151 - STUDIO INSTR-STRINGS (1)
      - Complete
        - MUA161 - STUDIO INSTR-WOODWINDS (1)
        - MUA171 - STUDIO INSTR-BRASS (1)
        - MUA181 - STUDIO INSTR-PERCUSSION (1)
  - Complete
    - MUE429 - ORG & DIR INSTRU GRP SEC SCH (3)

#### Additional Concentration Requirements

15 Total Credits

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- Complete all of the following
  - Complete
    - MUE321 - CHORAL/INSTRUMENTAL DIR OBSERV (1)
    - MUE328 - TEACHING GENERAL MUSIC (3)
    - MU302 - MUSICAL MATLS OF MODERN ERA (3)
    - MU401 - FORM AND ANALYSIS (3)
    - MU416 - ORCHESTRATION (3)
    - MU425 - ADVANCED CONDUCTING (2)
  - Piano Proficiency Exam

#### Education Requirements

33 Total Credits

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- Complete
  - ED301 - INTRO TO EDUCATION PRACTICUM (0)
  - ED308 - EDUCATIONAL PSYCHOLOGY (3)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
  - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
  - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - ED408 - TCHG READING/CONTENT AREA (3)
  - ED410 - FOUNDATIONS EDUC EVALUAT (3)
  - ED499 - P-12 INTERNSHIP (12)

Grand Total Credits: **55 - 57**

## **Music (BA) - Music Technology (Concentration)**

### **Description**

The BA in Music with a concentration in Music Technology is designed for students with dual interests in music and computer technology. It includes both a core in "classical" performance requirements, coursework in music technology, electrical engineering, and computer engineering. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### **Concentration Requirements**

Concentration Requirements

22 Total Credits

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- Complete all of the following
  - Complete
    - MU207 - MUSIC TECHNOLOGY I (3)
    - MU208 - MUSIC TECHNOLOGY II (3)
    - MU305 - MUSIC TECHNOLOGY III (3)
    - MU306 - MUSIC TECHNOLOGY IV (3)
    - MU404 - MUSIC TECHNOLOGY INDIV PROJECT (1)
    - MU406 - INTERNSHIP IN MUSIC TECHNOLOGY (3)
    - FMA260 - VIDEO PRODUCTION (3)
  - 3 hours from the following:  
Technical Elective. The technical elective is selected by the student in conjunction with their Music Technology advisor.

General Electives

13 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 13
  - Elective hours vary by program, see advisor.

Grand Total Credits: **35**

## Music (BA) - Performance Music (Concentration)

### Description

The BA in Music with a concentration in Performance Music benefits students desiring additional performance studies beyond the standard music major. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### Concentration Requirements

Concentration Requirements

22 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - MUA499 - PERFORMANCE EMPHASIS RECITAL (1.5)
    - MU302 - MUSICAL MATLS OF MODERN ERA (3)
    - MU401 - FORM AND ANALYSIS (3)
    - MU425 - ADVANCED CONDUCTING (2)
  - 1.5 hours from any MUA 400 - level course(s)
  - Additional Ensemble
  - Complete all of the following
    - 5 hours from any MUX 300 - level course(s)
    - 3 of the 5 hours should be conducted ensembles. Conducted Ensembles include: MUX 390, MUX 391, MUX 392, MUX 393, and MUX 399.
  - Music Elective Hours
  - Earned at least 4 credits from MU, MUA, or MUX
  - Music Upper Level Hours
  - 2 hours from any MU, MUA, or MUX 300 - 400 level course(s)
  - Piano Proficiency Exam

General Electives

13 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 13
  - Elective hours vary by program, see advisor.

Grand Total Credits: **35**

## **Music (BA) - Piano Pedagogy (Concentration)**

### **Description**

The BA in Music with a concentration in Piano Pedagogy is designed for pianists who want to prepare themselves to open their own piano teaching studios. In addition to the standard music core of classes, this emphasis offers piano pedagogy classes and internships and courses in marketing and entrepreneurship. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/music/degrees/undergraduate>.

### **Concentration Requirements**

Concentration Requirements

22 Total Credits

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- Complete
  - MU320 - PIANO PEDAGOGY (2)
  - MU321 - PIANO PEDAGOGY II (2)
  - MU420 - PIANO LITERATURE (2)
  - MU409 - INTERNSHIP GRP PIANO PEDAGOGY (1)
  - MU410 - INTERNSHIP INDIVID PIANO PEDAG (3)
  - MU110 - INTRO ARTS MANAGEMENT (3)
  - MUE328 - TEACHING GENERAL MUSIC (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - FIN301 - PRINCIPLES OF FINANCE (3)

General Electives

13 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 13
  - Elective hours vary by program; see advisor.

Grand Total Credits: **35**

## Music (Minor)

### Program Description

Students may select music as a supportive minor to their major discipline. A total of 23 semester hours of music are necessary (12 semester hours upper-level).

### Number of Credit Hours

23

### Degree Requirements

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### Minor Requirements

Required Courses

7 Total Credits

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- Complete
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - MU201 - MUSIC THEORY I (3)
  - MU203 - MUSICIANSHIP SKILLS I (1)

Ensemble Courses

6 Total Credits

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- 6 hours from any MUX 300 - 400 level course(s)

Music Electives

6 Total Credits

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- 6 hours from any MU 300 - 400 level course(s)

Studio Instruction

4 Total Credits

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- 4 hours from any MUA or MUJ 100 - 400 level course(s)

Grand Total Credits: **23**

## Music, Stage, and Screen (Minor)

### Number of Credit Hours

24

### Degree Requirements

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### Minor Requirements

- Complete 1 of the following
  - Theatre Majors
    - Complete all of the following
      - Complete
        - MU108 - INTRODUCTION TO MUSIC THEORY (3)
        - TH155 - SURVEY MUSICAL THEATRE (3)
        - TH115 - INTRO STAGE MOVEMENT (3)
      - 3 hours from:
        - MUA111 - STUDIO INSTR-VOICE (1)
      - 6 hours from:
        - TH425 - THEATRE MAINSTAGE (1 - 3)
        - MUX395 - OPERA WORKSHOP (1)
      - 6 hours from the following:  
Upper Level Elective (Please see minor advisor for list of approved electives)
  - Music Majors
    - Complete all of the following
      - Complete
        - TH115 - INTRO STAGE MOVEMENT (3)
        - TH150 - SCRIPT ANALYSIS (3)
        - TH150 - SCRIPT ANALYSIS (3)
        - TH221 - ACTING (3)
      - 6 hours from:
        - TH425 - THEATRE MAINSTAGE (1 - 3)
        - MUX395 - OPERA WORKSHOP (1)
      - 6 hours from the following:  
Upper Level Elective (Please see minor advisor for list of approved electives)
  - Any Other Major
    - Complete all of the following
      - Complete
        - FMA123 - INTRO TO FILM STUDIES (3)
        - FMA260 - VIDEO PRODUCTION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
        - MU207 - MUSIC TECHNOLOGY I (3)
        - MU208 - MUSIC TECHNOLOGY II (3)
        - MU305 - MUSIC TECHNOLOGY III (3)
      - 6 hours from the following:  
Upper Level Elective (Please see minor advisor for list of approved electives)

Grand Total Credits: **24**

## Philosophy (BA)



## **Program Description**

The BA in Philosophy provides a well-rounded educational foundation that prepares graduates for rewarding, successful in a plethora of fields, including law, medicine, business, and government. The program teaches students to articulate ideas intrinsic to humanity, evaluate them, and propose and defend alternatives. It also has them examine influential historical and contemporary positions on these ideas and the questions they raise, while they acquire and refine the skills necessary to address them responsibly. For further information, please refer to the department web site at

<https://www.uah.edu/ahs/departments/philosophy>.

## **Number of Credit Hours**

120

## **Degree Requirements**

Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)

- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)

- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

*keyboard\_arrow\_up*

Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)

- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

17 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 3 hours from:

*keyboard\_arrow\_up*

Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 13 hours from the following:  
Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Grand Total Credits: **17**

## **Major Requirements**

Philosophy Core Requirements

15 Total Credits

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- Complete all of the following
  - 3 hours from:
    - PHL103 - INTRODUCTION TO LOGIC (3)
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - 9 hours from any PHL 300 - 400 level course(s)

Grand Total Credits: **15**

## **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

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Fall

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- Complete all of the following
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - PHL102 - INTRO TO ETHICS (3)
  - 3 Hours Mathematics
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 Hours Social & Behavioral Science
  - 4 Hours Lab Science

Year 2

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Fall

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- Complete all of the following
  - 3 hours from:
    - PHL103 - INTRODUCTION TO LOGIC (3)
  - 3 hours from:
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - 3 Hours Literature
  - 3 Hours Social & Behavioral Science
  - 3 Hours Fine Art

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours Philosophy Elective (PHL 300+ or 400+ Course)
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Literature or Humanities
  - 3 Hours Social & Behavioral Science

Year 3

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Fall

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- Complete all of the following
  - 6 Hours Philosophy Elective (PHL 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 Hours Philosophy Elective (PHL 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 6 Hours Philosophy Elective (PHL 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours General Elective



Spring

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- Complete all of the following
  - 3 Hours Philosophy Elective (PHL 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours General Elective
  - 3 Hours General Elective

## **Philosophy (BA) - Philosophy, General (Concentration)**

### **Concentration Requirements**

Major Requirements

15 Total Credits

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- Complete all of the following
  - 12 hours from any PHL 300 - 400 level course(s)
  - 3 hours from any PHL 100 - 400 level course(s)

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

14 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 14
  - Elective hours vary by program, see advisor.

Grand Total Credits: **47**

## Philosophy (BA) - Pre-Law (Concentration)

### Concentration Requirements

#### Major Requirements

15 Total Credits

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- Complete all of the following
  - Earned at least 1 of the following:
    - PHL403 - ADV MORAL PHILOSOPHY (3)
    - PHL438 - CONTEMPORARY POLITICAL THOUGHT (3)
  - 9 hours from:
    - PHL320 - SYMBOLIC LOGIC (3)
    - PHL330 - CLASSI POLITI PHILOSOPHY (3)
    - PHL332 - MODERN POLITICAL PHILOSO (3)
    - PHL335 - FEMINIST PHILOSOPHY (3)
    - PHL337 - PHILOSOPHY OF RACE (3)
  - 3 hours from any PHL 100 - 400 level course(s)

#### Minor Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from the following:  
Minor

#### General Electives

14 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 14
  - Elective hours vary by program, see advisor.

Grand Total Credits: **47**

## Philosophy (Minor)

### Program Description

The minor in Philosophy is designed to help students better understand the nature of what it means to live a good life and reason well, and to explore the moral and conceptual foundations of their own disciplines. For further information, please refer to the department web site at

<https://www.uah.edu/ahs/departments/philosophy>.

### Number of Credit Hours

21

### Minor Requirements

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - Complete
    - PHL103 - INTRODUCTION TO LOGIC (3)
  - 3 hours from any PHL 100 - 400 level course(s)
  - 12 hours from any PHL 300 - 400 level course(s)

Grand Total Credits: **21**

## Political Science (BA)

### Program Description

The BA in Political Science is designed to introduce students to the study of government, politics, policies, and the state. The program covers subfields of political theory and philosophy, international relations, foreign governments and comparative politics, public law, research methods, public policy, and American politics. A particular strength is a focus on skills for creating, reviewing, and evaluating public policy. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/political-science>.

### Number of Credit Hours

120

### Degree Requirements

Degree Requirements

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- Complete all of the following
  - BA Degree Requirements (CAHS)
    - Complete all of the following
      - 30% of total degree requirements must be taken at 300 level or higher
      - Must have a 2.0 GPA in major, minor, and overall
      - No more than 6 credit hours of HPE may count in degree requirements
      - 12 of the last 18 credit hours must be taken at UAH
      - 25% of the major, minor, and overall coursework must be taken at UAH
      - No more than 50% of total degree requirement credit hours can come from a two-year school
  - PSC 300 may not be included as a Political Science elective.

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)

- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)

- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

*keyboard\_arrow\_up*

- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

*keyboard\_arrow\_up*

Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)

- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)
- 8 hours from:
  - keyboard\_arrow\_up*
  - Area III: Mathematics and Sciences - Sciences
    - AST100 - SURVEY OF ASTRONOMY (4)
    - AST106 - EXPLORING THE COSMOS I (4)
    - AST107 - EXPLORING THE COSMOS II (4)
    - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH121M - GENERAL CHEMISTRY I M (3)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
    - PH100 - CONCEPTUAL PHYSICS (4)
    - PH101 - GENERAL PHYSICS I (4)
    - PH102 - GENERAL PHYSICS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)
      - keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**



## **Area V (Pre-Professional) Requirements**

Area V Requirements

11 Total Credits

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- Complete all of the following

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- Complete

- FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 7 hours from the following:

Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Grand Total Credits: **11**

## **Major Requirements**

Major Requirements

36 Total Credits

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- Complete all of the following
  - Complete
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
    - PSC103 - INTRO TO STATE & LOCAL GOVT (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
    - PSC300 - INTRO SOCIAL SCIENCE STATISTIC (3)
    - PSC484 - SENIOR SEMINAR (3)
  - Earned at least 1 of the following:
    - PSC330 - CLASSI POLITI PHILOSOPHY (3)
    - PSC332 - MODERN POLITICAL PHILOSO (3)
  - 3 hours from any PSC 100 - 400 level course(s)
  - 12 hours from any PSC 300 - 400 level course(s)

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

Electives

14 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 14
  - Elective hours vary by program, see advisor.

Grand Total Credits: **68**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Mathematics
  - 3 Hours Fine Art

Spring

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- Complete all of the following

- 3 hours from:
  - PSC103 - INTRO TO STATE & LOCAL GOVT (3)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 4 Hours Lab Science
- 3 Hours Humanities
- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 3 hours from:
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - 3 hours from:
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
  - 4 Hours Lab Science
  - 3 Hours Literature
  - 3 Hours Social & Behavioral Science

Spring

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- Complete all of the following
  - 3 hours from:
    - PSC260 - INTRO INTERNTL RELATIONS (3)
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 Hours Literature
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - PSC300 - INTRO SOCIAL SCIENCE STATISTIC (3)
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 hours from:
    - PSC330 - CLASSI POLITI PHILOSOPHY (3)

- PSC332 - MODERN POLITICAL PHILOSOPHY (3)

- 3 Hours Minor Course
- 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 Hours Political Science Elective (PSC 300+ or 400+ Course)
  - 3 Hours Political Science Elective (PSC 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - PSC484 - SENIOR SEMINAR (3)
  - 3 Hours Political Science Elective (PSC 300+ or 400+ Course)
  - 3 Hours Political Science Elective (PSC 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course

Spring

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- Complete all of the following
  - 3 Hours Political Science Elective
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours General Elective
  - 3 Hours General Elective

## **Political Science (BA) - JUMP: BA PSC, Public Affairs and Policy (MA)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BA in Political Science to an MA in Public Affairs and Policy is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

## **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Approved Master's Program**

Public Affairs and Policy (MA)

## **Max Shared Hours**

12

## **Minimum GPA**

3.5

## **JUMP Launch (Undergraduate Program)**

JUMP\_PSC@uah.edu

## **JUMP Landing (Graduate Program)**

MA\_PublicAffairs@uah.edu

## **JUMP Admission Requirements**

- Complete all of the following
  - Have sophomore or junior standing
  - Have completed at least 9 hours of political science coursework at UAH, with at least 6 hours at the 300 level or above

## **Political Science (Minor)**

### **Program Description**

The minor in Political Science is designed for students who want to improve their ability to understand the workings of government and the role of policy in the exercise of political power. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/political-science>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
  - Earned at least 1 of the following:
    - PSC103 - INTRO TO STATE & LOCAL GOVT (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
  - 12 hours from any PSC 300 - 400 level course(s)

Grand Total Credits: **21**

## **Pre-Law (Certificate)**

### **Program Description**

The certificate in Pre-Law is designed to provide undergraduate students with skills that are required for law school and the practice of law: analytical reasoning, reading, and writing. It is also intended to provide a background on various perspectives on law from a variety of disciplines not often associated with legal studies, such as sociology, psychology, and history. A student who chooses to pursue a certificate in Pre-Law may choose *any major or minor in any college* at UAH. For many students, the certificate can be earned without adding additional hours to a degree program. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/pre-law>.

### **Number of Credit Hours**

15

## **Major Requirements**

Certificate Requirements

15 Total Credits

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- Complete all of the following

Core Courses

- Complete all of the following
  - 6 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
  - 3 hours from:
    - HY300 - CRAFT OF HISTORY (3)
    - PHL330 - CLASSI POLITI PHILOSOPHY (3)
    - PSC330 - CLASSI POLITI PHILOSOPHY (3)
    - PHL332 - MODERN POLITICAL PHILOSO (3)
    - PSC332 - MODERN POLITICAL PHILOSO (3)

Elective Courses

- Complete all of the following
  - 6 hours from:
    - CM418 - LEGAL ARGUMENT (3)
    - EH320 - PRACTICUM IN WRITING (3)
    - HY368 - AMERICAN ENVIRONMENTAL HISTORY (3)
    - HY439 - RECENT AMERICAN HISTORY (3)
    - HY473 - U.S.-LATIN AMERICAN RELATIONS (3)
    - PHL320 - SYMBOLIC LOGIC (3)
    - PSC452 - AMER CONSTITUTIONAL LAW (3)
    - PSC454 - CIVIL LIBERTIES (3)
    - PY434 - PSYCHOLOGY AND LAW (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - SOC307 - SOCIOLOGY OF LAW (3)
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
    - Course Not Found
    - WLC199F - SPECIAL TOPICS (3)
    - WLC199G - SPECIAL TOPICS (3)
    - Course Not Found
    - WLC199R - SPECIAL TOPICS (3)
    - WLC199S - SPECIAL TOPICS (3)
  - With appropriate justification, the pre-law advisor may allow other elective courses.

Grand Total Credits: **15**

## **Professional Studies (BA) (Fully Online)**

## **Program Description**

The BA in Professional Studies is an interdisciplinary degree that allows students to combine courses from areas such as business, information technology, natural sciences, humanities, and social sciences to create a customized degree pathway. Students can choose from three concentrations: Leadership and Organizational Studies; Science, Technology, and Society; and General Studies. Offering a flexible, online pathway to the degree, the Professional Studies major is ideal for working professionals who are ready to complete their bachelor's degree. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/professional-studies>.

## **Delivery Method**

Fully Online

## **Number of Credit Hours**

120

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARS160 - DRAWING: FOUNDATIONS (3)
        - MU100 - INTRO TO MUSIC LITERATURE (3)
        - TH122 - THEATRE APPRECIATION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:
      - keyboard\_arrow\_up*



Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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#### Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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#### Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV

- Complete all of the following
  - 3 hours from:
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
  - 9 hours from:
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - keyboard\_arrow\_up*
    - Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

4 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - PRO301 - FOUNDATIONS ADULT LEARNING (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Grand Total Credits: **4**

## **Major Requirements**

Core Requirements

12 Total Credits

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- 12 hours from:
  - EH340 - ACADEMIC WRITING (3)
  - PRO320 - INDS PERSPECT & CRITICAL THNKG (3)
  - PRO498 - INTERDISC RES METHODS & APPS (3)
  - PRO499 - CAPSTONE EXP: RSCH THESIS/PROJ (3)

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

Grand Total Credits: **30**

## **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Professional Studies (BA) (Fully Online) - General Studies (Concentration)**

### **Concentration Requirements**

Requirements

18 Total Credits

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- 18 hours from the following:  
Field of Study focus. Approved coursework in a designated field of study, with a minimum of 12 hours at the 300-400 level.

Grand Total Credits: **18**

## **Professional Studies (BA) (Fully Online) - JUMP: BA PRO STUD (Leadership & Organizational Studies)**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BA in Professional Studies with a concentration in Leadership & Organizational Studies to one of five master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_PRO@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MS\_SCLM@uah.edu or

MSIS\_IS@uah.edu or

MSM\_HRM@uah.edu

### **JUMP Landing Options**

JUMP Landing Options

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- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MS SCLM
  - Admitted to: MSIS IS
  - Admitted to: MSM HRM

## **4-Year Plan**

### Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Professional Studies (BA) (Fully Online) - Leadership & Organizational Studies (Concentration)**

### **Concentration Requirements**

Requirements

18 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - MGT301 - MANAGING ORGANIZATIONS (3)
  - 3 hours from:
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT410 - LEADERSHIP, PERSONAL DEV & ORG (3)
  - 12 hours from the following:  
additional hours of related course material, with at least 6 hours at the 300-400 level.

Grand Total Credits: **18**



## **Professional Studies (BA) (Fully Online) - Science, Technology and Society (Concentration)**

### **Concentration Requirements**

Concentration Requirements

18 Total Credits

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- Complete all of the following
  - 3 hours from:
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - 15 hours from the following:
    - 6-9 Hours related to science, engineering, or technology. 6-9 Hours related to Arts, Humanities, and Social Sciences
  - 12 hours must be 300+ level

Grand Total Credits: **18**

## **Psychology, Applied Experimental (PhD)**

### **Program Description**

The PhD in Applied Experimental Psychology is designed to prepare students to solve complex real-world problems by utilizing knowledge of scientific theory and the skills involved in conducting high-quality research. The program will develop professionals who can tackle important issues facing the Huntsville business and government community, the state of Alabama, and the nation. Students can take advantage of the unique hybrid and online curriculum to meet their degree goals while taking classes in one of two concentrations -- Human Factors or Psychology Law. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology/programs/graduate/doctoral>.

### **Number of Credit Hours**

72

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

## **Psychology, Applied Experimental (PhD) - Human Factors (Concentration)**

### **Description**

The PhD in Applied Experimental Psychology with a concentration in Human Factors focuses on human interactions with technologies. In this concentration, students learn about human cognition, decision making, system design principles, ergonomics, and much more as it relates to interactions with technologies such as automation, artificial intelligence, robotics, computers, or any other widely adopted technologies. Students in the PhD program develop exceptional research, analytical, and communication skills that, when paired with this concentration, situates them well for careers in human factors, user experience, human-systems integration, academia, and various other government/industry positions. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology>.

### **Concentration Requirements**

Core Courses  
42 Total Credits  
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#### Core

- Complete all of the following
  - 12 hours from:
    - PY701 - HUMAN SYSTEM INTEGRATION (3)
    - PY702 - COMPU CONCEPTS & INTRO PROG (3)
    - PY703 - PY HUMAN-COMPUTER INTERACTION (3)
    - PY704 - HUMAN MACHINE SYSTEM DESIGN (3)
    - PY705 - USABILITY EVAL & TESTING (3)
    - PY706 - MGMT COMPLEX SYSTEMS (3)
  - or PY Elective in Concentration

#### Elective

3 Total Credits

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- 3 hours from:
  - PY530 - PSYCHOMETRICS (3)
  - PY675 - INTERNSHIP IN APPLD PSYCHOLOGY (1 - 6)
  - PY707 - ERGONOMICS & REGA USER CEN DES (3)
  - PY708 - RAPID PROTOTYPING (3)
  - PY709 - HUMAN ARTIFI INTELLI INTERACT (3)
  - PY710 - MACHINE LEARN FOR SOC/BEH RES (3)
  - PY711 - COMPUTATIONAL PY (3)
  - PY712 - SOC COG NEUROSCIENCE (3)

#### Minor - Quantitative Psychology

9 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - PY713 - QUANTITATIVE STAT METHODS (3)
    - PY714 - MULTIVARIATE STATS (3)
  - 3 hours from:
    - PY530 - PSYCHOMETRICS (3)
    - PY710 - MACHINE LEARN FOR SOC/BEH RES (3)
    - PY711 - COMPUTATIONAL PY (3)
    - PY715 - R FOR DATA SCIENCE (3)
    - PY718 - ADV STRUC EQUA MODELING (3)

#### Dissertation

18 Total Credits

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- 18 hours from:
  - PY799 - DISSERTATION (6)

#### Additional Coursework

30 Total Credits

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- Complete 1 of the following
  - Post-Masters Student without Psychology Background
    - Complete all of the following
      - 12 hours from:
        - PY607 - PROFESSIONAL DEV IN RES & TCHG (3)
        - PY608 - GRAD PRACT TCHG & CAREER EXPLO (1)
        - PY610 - EXPERIMENTAL DESIGN (3)
        - PY611 - STAT FOR EXPERI METHODS (3)
        - PY719 - HISTORY & SYSTEMS (3)
      - 18 hours from the following:  
Remaining Masters Level Courses

#### Post- Baccalaureate to PhD Curriculum

- Complete all of the following
  - 18 hours from:
    - PY502 - INDUSTRIAL & ORGANIZA PSY (3)
    - PY503 - HUMAN FACTORS PSYCHOLOGY (3)
    - PY607 - PROFESSIONAL DEV IN RES & TCHG (3)
    - PY608 - GRAD PRACT TCHG & CAREER EXPLO (1)
    - PY610 - EXPERIMENTAL DESIGN (3)
    - PY611 - STAT FOR EXPERI METHODS (3)
    - PY641 - CONC READ/RES SPECIALIZ AREA (3)
  - 6 hours from any PY 500 - 700 level course(s)
  - 6 hours from:
    - PY699 - MASTER'S THESIS (6)

Grand Total Credits: **72**

## **Psychology, Applied Experimental (PhD) - Psychology Law (Concentration)**

### **Description**

The PhD in Applied Experimental Psychology with a concentration in Psychology and Law focuses on Psychology as it applies to the legal system. In this concentration, students learn and develop prolific lines of research in human cognition, learning, memory, forensic psychology, and decision making, with foci on issues like eyewitness memory, competency to stand trial, investigative interviews, and even child witnesses. Students in the PhD program develop exceptional research, analytical, and communication skills that, when paired with this concentration, situates them well for careers in law enforcement at both the local and federal level (e.g. Police, DHS, ATF, FBI), academia, and various other government/industry positions. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology>.

### **Concentration Requirements**

#### Core Courses

42 Total Credits

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#### Core

- Complete all of the following
  - 12 hours from:
    - PY725 - EYEWITNESS PY (3)
    - PY730 - FORENSIC/INVEST INTERVIEWS (3)
    - PY735 - CHILD WITNESSES (3)
    - PY740 - INTERROGATION & DECEPTION (3)
    - PY775 - PROSEMINAR SOC PY (3)
    - PY780 - APPLIED COGNITIVE PY (3)
  - or PY Elective in Concentration

#### Elective

3 Total Credits

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- 3 hours from:
  - PY505 - PSYCHOPHARMACOLOGY (3)
  - PY530 - PSYCHOMETRICS (3)
  - PY537 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
  - PY675 - INTERNSHIP IN APPLD PSYCHOLOGY (1 - 6)
  - PY712 - SOC COG NEUROSCIENCE (3)
  - PY745 - WRONGFUL CONVICTION (3)
  - PY750 - ASSMNT COMPETENT STAND TRIAL (3)

#### Minor - Quantitative Psychology

9 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - PY713 - QUANTITATIVE STAT METHODS (3)
    - PY714 - MULTIVARIATE STATS (3)
  - 3 hours from:
    - PY530 - PSYCHOMETRICS (3)
    - PY710 - MACHINE LEARN FOR SOC/BEH RES (3)
    - PY711 - COMPUTATIONAL PY (3)
    - PY715 - R FOR DATA SCIENCE (3)
    - PY718 - ADV STRUC EQUA MODELING (3)

Dissertation

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - PY799 - DISSERTATION (6)

Additional Coursework

30 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - Post-Masters Student without Psychology Background
    - Complete all of the following
      - 12 hours from:
        - PY607 - PROFESSIONAL DEV IN RES & TCHG (3)
        - PY610 - EXPERIMENTAL DESIGN (3)
        - PY611 - STAT FOR EXPERI METHODS (3)
        - PY719 - HISTORY & SYSTEMS (3)
      - 18 hours from the following:  
Remaining Masters Level Courses
  - Post- Baccalaureate to PhD Curriculum
    - Complete all of the following
      - 15 hours from:
        - PY607 - PROFESSIONAL DEV IN RES & TCHG (3)
        - PY610 - EXPERIMENTAL DESIGN (3)
        - PY611 - STAT FOR EXPERI METHODS (3)
        - PY641 - CONC READ/RES SPECIALIZ AREA (3)
        - PY534 - PSYCHOLOGY AND LAW (3)
      - 9 hours from any PY 500 - 700 level course(s)
      - 6 hours from:
        - PY699 - MASTER'S THESIS (6)

Grand Total Credits: **72**

## **Psychology (BA)**

### **Program Description**

The BA in Psychology at UAH is designed to develop scientific thinking about the discipline of Psychology. The program is tailored to focus on the counseling dimension of the field. This program includes opportunities for meaningful hands-on learning activities, through completing internships, working side by side with faculty doing research in labs, and engagement with industry/government partners to prepare students for life after UAH. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology>.

## **Number of Credit Hours**

120

## **Degree Requirements**

Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:
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        - Area II: Humanities and Fine Arts - Fine Arts
          - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
          - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
          - ARH103 - ARH SUR: WORLD ART (3)
          - ARS160 - DRAWING: FOUNDATIONS (3)
          - MU100 - INTRO TO MUSIC LITERATURE (3)
          - TH122 - THEATRE APPRECIATION (3)
          - FMA123 - INTRO TO FILM STUDIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)



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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- Psych Services Concentration students should take PHL 102

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following

- 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
  - MA107 - ALGEBRA WITH APPLICATIONS (3)
  - MA110 - FINITE MATHEMATICS (3)
  - MA112 - PRECALCULUS ALGEBRA (3)
  - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
  - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA171 - CALCULUS I (4)
  - MA181 - INTRODUCTION TO STATISTICS (3)
  - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
  - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
  - AST106 - EXPLORING THE COSMOS I (4)
  - AST107 - EXPLORING THE COSMOS II (4)
  - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
  - CH101 - INTRO TO CHEMISTRY (3)
  - CH105 - INTRO CHEMISTRY LAB (1)
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH121M - GENERAL CHEMISTRY I M (3)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
  - PH100 - CONCEPTUAL PHYSICS (4)
  - PH101 - GENERAL PHYSICS I (4)
  - PH102 - GENERAL PHYSICS II (4)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:  
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Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)  
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Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:  
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Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)  
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Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)  
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Area IV - History, Social and Behavioral Sciences - SBS
        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
        - PY101 - GENERAL PSYCHOLOGY I (3)
        - PY201 - LIFE-SPAN DEVELOPMENT (3)
        - SOC100 - INTRO TO SOCIOLOGY (3)
        - SOC103 - INTRO TO CRIMINOLOGY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
  - Psych Services Concentration students should take SOC 100

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

17 Total Credits

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- Complete all of the following
  - 7 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - SOC100 - INTRO TO SOCIOLOGY (3)
    - PHL102 - INTRO TO ETHICS (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 7 hours from the following:

Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Grand Total Credits: **17**

## **Major Requirements**

### Major Requirements

35 Total Credits

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- Complete all of the following

#### Required Core

- 23 hours from:

- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- PY300 - PSYCHOLOGICAL STATISTICS (3)
- PY302 - RESEARCH METHODS FOR PSYCH (3)
- PY304 - PSYCHOLOGICAL STATISTICS LAB (1)
- PY305 - PY RESEARCH METHODS LAB (1)
- PY404 - THEORIES OF COUNSELING (3)
- PY435 - PSYCHOPATHOLOGY (3)
- PY488 - PY SERVICES INTERNSHIP (3)

#### Developmental Bases

- 3 hours from:

- PY301 - PERSONALITY (3)
- PY333 - PY OF ADJUSTMENT & ADAPTATION (3)
- PY409 - PSYCHOLOGY OF AGING (3)
- PY415 - DEVELOPMENTAL PSYCHOLOGY (3)

#### Biological Bases

- 3 hours from:

- PY316 - PERCEPTION (3)
- PY414 - HUMAN RESEARCH:LEARNING (3)
- PY436 - BIOLOGICAL PSYCHOLOGY (3)
- PY480 - COGNITION (3)
- PY405 - PSYCHOPHARMACOLOGY (3)

#### Major Electives

- Complete all of the following

- 6 hours from:

- PY330 - NONVERBAL COMMUNICATION (3)
- PY375 - SOCIAL PSYCHOLOGY (3)
- PY407 - CROSS-CULTURAL PSYCHOLOGY (3)
- PY420 - SPECIAL TOPICS (3)
- PY430 - PSYCHOMETRICS (3)
- PY434 - PSYCHOLOGY AND LAW (3)
- PY437 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
- SOC319 - DEVIANCE & SOCIAL CONTROL (3)
- SOC330 - RACE AND ETHNICITY (3)
- Or one of the classes above minimum in Developmental Bases
- Or one of the classes above minimum in Biological Bases

### General Electives

15 Total Credits

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- Complete all of the following

- Earned at least this many additional elective credits: 15
- Elective courses vary by program, see advisor.

Grand Total Credits: **50**

## **Minor Requirements**

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

Grand Total Credits: **18**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - PY101 - GENERAL PSYCHOLOGY I (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics
  - 3 Hours Fine Art

Spring

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- Complete all of the following
  - 3 hours from:
    - PY201 - LIFE-SPAN DEVELOPMENT (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science
  - 3 Hours Humanities or Fine Art

Year 2

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Fall

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- Complete all of the following
  - 4 hours from:
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 4 Hours Lab Science
  - 3 Hours Literature
  - 3 Hours History

Spring

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- Complete all of the following
  - 4 hours from:
    - PY305 - PY RESEARCH METHODS LAB (1)
    - PY302 - RESEARCH METHODS FOR PSYCH (3)
  - 3 Hours 2nd Literature
  - 3 Hours 2nd History
  - 3 Hours 2nd Social & Behavioral Science
  - 3 Hours Area V Charger Foundations Course

Year 3

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No Rules

Fall

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- Complete all of the following
  - 6 Hours Basis of Behavior Courses
  - 6 Hours Area V Charger Foundations Courses
  - 3 Hours Minor Course
  - 3 hours from:
    - PY404 - THEORIES OF COUNSELING (3)

Spring

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- Complete all of the following
  - 3 Hours Minor Course
  - 6 Hours Area V Charger Foundations Courses
  - 3 hours from:
    - PY435 - PSYCHOPATHOLOGY (3)

Year 4

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No Rules

Fall

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- Complete all of the following
  - 3 Hours PY Elective Course
  - 3 Hours PY Elective Course
  - 6 Hours Minor Courses
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - PY488 - PY SERVICES INTERNSHIP (3)
  - 9 Hours Minor Courses
  - 2 Hours General Elective

**Psychology (BA) - JUMP: BA PY, Psychology (MA)**

## **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BA in Psychology to an MA in Psychology is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

## **JUMP Completion Requirements**

Psychological Sciences Students  
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- Complete all of the following
  - - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY102 - APPLICATIONS IN PSYCHOLOGY (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)
    - PY302 - RESEARCH METHODS FOR PSYCH (3)
  - 1 Group A course (PY 316, PY 414, PY 436, PY 480)
  - 1 Group B course (PY 301, PY 375, PY 415, PY 435)

Graduate School JUMP Rules  
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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Approved Master's Program**

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## **Max Shared Hours**

12

## **Minimum GPA**

3.5

## **JUMP Launch (Undergraduate Program)**

JUMP\_PY@uah.edu

## **JUMP Landing (Graduate Program)**

MA\_Psych@uah.edu

## **Psychology (BS)**

## **Program Description**

The BS in Psychology at UAH is designed to develop scientific thinking about the discipline of Psychology. The program is tailored to focus on the research-oriented aspects of Psychology. This program includes opportunities for meaningful hands-on learning activities, through completing internships, working side by side with faculty doing research in labs, and engagement with industry/government partners to prepare students for life after UAH. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology>.

## **Number of Credit Hours**

120

## **Degree Requirements**

Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:
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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- 3 hours from:

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
  - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- Psych Sciences students should take PHL 102

Area III: Mathematics and Sciences

11 Total Credits

*keyboard\_arrow\_up*

- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)

- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
        - PY101 - GENERAL PSYCHOLOGY I (3)
        - PY201 - LIFE-SPAN DEVELOPMENT (3)
        - SOC100 - INTRO TO SOCIOLOGY (3)
        - SOC103 - INTRO TO CRIMINOLOGY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
  - Psych Sciences students should take SOC 100

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

17 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 13 hours from the following:

Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Grand Total Credits: **17**

## **Major Requirements**

Major Requirements

34 Total Credits

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- Complete all of the following
  - 13 hours from:
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)
    - PY303 - PY RESEARCH METHODS (3)
    - PY306 - PY SCIENCES METHODS LAB (1)
    - PY498 - HUMAN RESEARCH I (3)

Group A

- 6 hours from:
  - PY316 - PERCEPTION (3)
  - PY414 - HUMAN RESEARCH:LEARNING (3)
  - PY436 - BIOLOGICAL PSYCHOLOGY (3)
  - PY480 - COGNITION (3)

Group B

- 6 hours from:
  - PY301 - PERSONALITY (3)
  - PY375 - SOCIAL PSYCHOLOGY (3)
  - PY415 - DEVELOPMENTAL PSYCHOLOGY (3)
  - PY435 - PSYCHOPATHOLOGY (3)

Major Electives

- Complete all of the following
  - 6 hours from any PY 300 - 400 level course(s)
  - 3 hours from any PY 200 - 400 level course(s)

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

10 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 10
  - Elective courses vary by program, see advisor.

Grand Total Credits: **62**

## **Minor Requirements**

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

Grand Total Credits: **18**

## **4-Year Plan**

Year 1

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - PY101 - GENERAL PSYCHOLOGY I (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3-4 Hours Mathematics
  - 3 Hours Fine Arts

Spring

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- Complete all of the following
  - 3 hours from:
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science
  - 3 Hours Humanities or 2nd Fine Art

Year 2

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No Rules

Fall

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- Complete all of the following
  - 4 hours from:
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)
  - 3 Hours Foreign Language (WLC 100+ Course)
  - 4 Hours Lab Science
  - 3 Hours History
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 4 hours from:
    - PY302 - RESEARCH METHODS FOR PSYCH (3)
    - PY306 - PY SCIENCES METHODS LAB (1)
  - 3 Hours 2nd Literature
  - 3 Hours 2nd History
  - 3 Hours 2nd Social & Behavioral Science
  - 3 Hours Area V Charger Foundations Course

Year 3

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 Hours PY Group A Course

- 3 Hours PY Group B Course
- 3 Hours Minor Course
- 6 Hours Area V Charger Foundations Courses

Spring

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- Complete all of the following
  - 3 Hours PY Group B Course
  - 3 Hours Psychology Elective (PY 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 6 Hours Area V Charger Foundations Courses

Year 4

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - PY498 - HUMAN RESEARCH I (3)
  - 3 Hours PY Group A Course
  - 6 Hours Minor Courses
  - 2 Hours General Elective

Spring

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- Complete all of the following
  - 3 Hours Psychology Elective
  - 9 Hours Minor Courses
  - 2 Hours General Elective



## Psychology (Minor)

### Program Description

The minor in Psychology is a great addition for students with any major. This minor teaches students how humans think, act, make decisions, and interact with one another, in a way that will help them in any career field they choose. Students develop an understanding of the human mind that allows them, depending on their majors, to pursue careers in jobs such as user-experience, criminal justice, sales/marketing, and human factors. Along the way, students will also develop strong analytical and communication skills that will help them flourish in their careers. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology>.

### Number of Credit Hours

21

### Degree Requirements

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### Minor Requirements

Required Courses

9 Total Credits

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- Complete all of the following
  - Complete
    - PY101 - GENERAL PSYCHOLOGY I (3)
  - Group A
  - 3 hours from:
    - PY316 - PERCEPTION (3)
    - PY414 - HUMAN RESEARCH:LEARNING (3)
    - PY480 - COGNITION (3)
    - PY436 - BIOLOGICAL PSYCHOLOGY (3)
  - Group B
  - 3 hours from:
    - PY301 - PERSONALITY (3)
    - PY375 - SOCIAL PSYCHOLOGY (3)
    - PY415 - DEVELOPMENTAL PSYCHOLOGY (3)
    - PY435 - PSYCHOPATHOLOGY (3)

PY Electives

12 Total Credits

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- Complete all of the following
  - 6 hours from any PY 100 - 400 level course(s)
  - 6 hours from any PY 300 - 400 level course(s)

Grand Total Credits: **21**

## **Psychology (MS)**

### **Program Description**

The MS in Psychology emphasizes an understanding and appreciation of the scientific basis of behavior. The focus is general-experimental with coursework in applied experimental, biological, cognitive, developmental, human factors, industrial/organizational, psycho-legal studies and research-based courses in psychopathology. Students will have the opportunity to gain hands-on research experience working side by side with faculty members in their labs.

For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology/programs/graduate/master-of-science>.

### **Number of Credit Hours**

30

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Psychology (MS) - Industrial/Organizational (Concentration)**

### **Description**

The MS in Psychology with a concentration in Industrial/Organizational Psychology is designed for students who are interested in applying psychology in business settings. The courses in this specialized sequence prepare students both for jobs in industry or for advanced study in a PhD program. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology/programs/graduate/master-of-science>.

## **Concentration Requirements**

### Core Requirements

15 Total Credits

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- 15 hours from:
  - PY502 - INDUSTRIAL & ORGANIZA PSY (3)
  - PY530 - PSYCHOMETRICS (3)
  - PY607 - PROFESSIONAL DEV IN RES & TCHG (3)
  - PY610 - EXPERIMENTAL DESIGN (3)
  - PY611 - STAT FOR EXPERI METHODS (3)

### Thesis/Non-Thesis Requirements

15 - 18 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 3 hours from:
        - PY641 - CONC READ/RES SPECIALIZ AREA (3)
      - 6 hours from:
        - PY699 - MASTER'S THESIS (6)
      - 6 hours from:
        - PY503 - HUMAN FACTORS PSYCHOLOGY (3)
        - PY508 - TEAMWORK & TEAM PROCESSES (3)
        - PY650 - SUPERVISED RESEARCH (1 - 6)
        - PY675 - INTERNSHIP IN APPLD PSYCHOLOGY (1 - 6)
        - MGT560 - EMPLOYEE STAFFING & DEVELOP (3)
        - MGT600 - ORGAN THRY, BEHAV & ENVIRONMEN (3)
        - MGT629 - LEADERSHIP: THRY & PRACTICE (3)
        - MGT631 - HRM & ORGANIZATIONAL BEHAVIOR (3)
        - ISE790 - ADV STATISTICAL APPLICATIONS (3)
  - Non-Thesis Seeking Students
    - Complete all of the following
      - 9 hours from:
        - PY650 - SUPERVISED RESEARCH (1 - 6)
        - PY675 - INTERNSHIP IN APPLD PSYCHOLOGY (1 - 6)
      - 9 hours from:
        - PY503 - HUMAN FACTORS PSYCHOLOGY (3)
        - PY508 - TEAMWORK & TEAM PROCESSES (3)
        - MGT560 - EMPLOYEE STAFFING & DEVELOP (3)
        - MGT600 - ORGAN THRY, BEHAV & ENVIRONMEN (3)
        - MGT629 - LEADERSHIP: THRY & PRACTICE (3)
        - MGT631 - HRM & ORGANIZATIONAL BEHAVIOR (3)
        - ISE790 - ADV STATISTICAL APPLICATIONS (3)

Grand Total Credits: **30 - 33**

## **Psychology (MS) - Psychology, General (Concentration)**

### **Description**

The MS in Psychology with a General concentration is the path for students pursuing the degree without also pursuing a concentration in industrial/organizational Psychology. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/psychology>

### **Concentration Requirements**

Requirements

30 Total Credits

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- Complete all of the following
  - 12 hours from:
    - PY607 - PROFESSIONAL DEV IN RES & TCHG (3)
    - PY608 - GRAD PRACT TCHG & CAREER EXPLO (1)
    - PY610 - EXPERIMENTAL DESIGN (3)
    - PY611 - STAT FOR EXPERI METHODS (3)
    - PY641 - CONC READ/RES SPECIALIZ AREA (3)
  - 12 hours from any PY 500 - 700 level course(s)
  - 6 hours from:
    - PY699 - MASTER'S THESIS (6)

Grand Total Credits: **30**

## **Public Affairs and Policy (MA)**

### **Program Description**

The MA program in Public Affairs & Policy serves the needs of students who are employed in public or private sector organizations in which the principles and practices of public policy formation, implementation, and evaluation, as well as the political dynamics that shape domestic or international policies, are relevant. The program also serves the needs of students who have recently completed an undergraduate program and wish to enhance their academic experience or further their educational objectives. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/political-science/programs/graduate>.

### **Number of Credit Hours**

33

## **Degree Requirements**

- Graduate School Degree Requirements

- Complete all of the following
  - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
  - No grade of D or F may be counted toward a graduate degree.
  - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
  - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Major Requirements**

### Foundation Courses

9 Total Credits

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- Complete all of the following
  - Complete
    - PSC600 - THE AMERICAN POLITY (3)
    - PSC601 - THE PUBLIC POLICY PROCESS (3)
    - PSC635 - PROGRAM EVALUATION AND METHODS (3)
  - Although these courses are required, they are not strictly prerequisites for other courses in the program. However, it is advised that students complete them as early in their program as practical.

### Political Science Electives

18 Total Credits

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- 18 hours from:
  - PSC520 - FEDERALISM & INTERGOV RELATION (3)
  - PSC540 - REGIONAL STUDIES (3)
  - PSC551 - LAW, COURTS & PUBLIC POLICY (3)
  - PSC561 - ECONOMIC DEVELOPMENT (3)
  - PSC562 - INTEL, SEC, & DECISION MAKING (3)
  - PSC564 - AMERICAN FOREIGN POLICY (3)
  - PSC566 - NATIONAL SECURITY STRGY & PLY (3)
  - PSC570 - ISSUES IN SECURITY POLICY (3)
  - PSC580 - SPECIAL TOPICS IN POLITICAL SC (1 - 3)
  - PSC610 - PUBLIC MANAGEMENT PROFESSIONS (3)
  - PSC611 - PUBLIC PERSONNEL ADMINIS (3)
  - PSC612 - BUDGETARY PROCESS (3)
  - PSC615 - SPEC TOPICS IN PUBLIC AFFAIRS (3)
  - PSC630 - PUBL VALUES/PUBL POLICY (3)
  - PSC695 - INTERNSHIP IN GOVERNMENT (1 - 6)
  - PSC698 - DIRECTED READINGS & RESEARCH (3)
  - PSC699 - MASTER'S THESIS (1 - 3)

### Capstone Course

3 Total Credits

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- Complete all of the following
  - Complete
    - PSC690 - CAPSTONE (3)
  - The Capstone course is required and should be taken during the last year of the program.

Grand Total Credits: **30**

## **Sociology (BA)**

### **Program Description**

The BA in Sociology provides a broad foundation for further studies in law, social work, social policy, psychology, criminology, or public health. Analytical and social science research skills prepare students for careers in market research, human services, government, health care, and law. The program emphasizes the development of both *academic* and *applied skills* that can be useful in a wide range of work settings. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/sociology/programs/major>

### **Number of Credit Hours**

## **Degree Requirements**

### Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

*keyboard\_arrow\_up*

- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)

- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)



- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

20 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from any SOC 100 - level course(s)

- 13 hours from the following:

Literature, Humanities, Fine Arts, Mathematics, Lab Science, and Social and Behavioral Sciences.  
AHS 250 & AHS 300 may also count as a pre-professional elective.

Grand Total Credits: **20**

## **Major Requirements**

Major Requirements

34 Total Credits

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- Complete all of the following
  - 16 hours from:
    - SOC100 - INTRO TO SOCIOLOGY (3)
    - SOC301 - RESEARCH METHODS (3)
    - SOC302 - SOCIOLOGICAL THEORY (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - SOC304 - STATISTICS LAB (1)
    - SOC495 - SENIOR CAPSTONE SEMINAR (3)
  - 9 hours from any SOC 300 - 400 level course(s)
  - 9 hours from any SOC 100 - 400 level course(s)

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

7 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 7
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **59**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - SOC100 - INTRO TO SOCIOLOGY (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Mathematics
  - 3 Hours Fine Art

Spring

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- Complete all of the following
  - 3 hours from:
    - SOC103 - INTRO TO CRIMINOLOGY (3)
  - 3 hours from:

- EH102 - COLLEGE WRITING II (3)
- EH103 - ACCELERATED COLLEGE WRITING (3)
- 3 Hours Humanities or Fine Art
- 4 Hours Lab Science
- 3 Hours Area V Charger Foundations Course

Year 2

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Fall

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- Complete all of the following
  - 3 hours from:
    - SOC206 - MARRIAGE AND FAMILY (3)
  - 3 Hours Literature
  - 3 Hours History
  - 4 Hours Lab Science
  - 3 Hours Humanities or Fine Art

Spring

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- Complete all of the following
  - 3 hours from:
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - 3 Hours Sociology Elective (SOC 300+ or 400+ Course)
  - 3 Hours Literature
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 hours from:
    - SOC301 - RESEARCH METHODS (3)
  - 3 Hours Sociology Elective (SOC 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 7 hours from:
    - SOC302 - SOCIOLOGICAL THEORY (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)

- SOC304 - STATISTICS LAB (1)

- 3 Hours Minor Course
- 3 Hours Minor Course
- 3 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 3 Hours Sociology Elective (SOC 300+ or 400+ Course)
  - 3 Hours Sociology Elective (SOC 300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - SOC495 - SENIOR CAPSTONE SEMINAR (3)
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 4 Hours General Elective

## **Sociology (Minor)**

### **Program Description**

The minor in sociology provides insights into the role social context plays in shaping the lives and interactions of individuals, and the the structure/operation of educational, religious, and political institutions. People in most careers can benefit from a deeper understanding of human behavior and social organization, making a minor in sociology and excellent supplement to a wide variety of majors, including secondary education, philosophy, communication arts, business, nursing, earth system science, history psychology, and political science. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/sociology/programs/minor>.

### **Number of Credit Hours**

21

### **Degree Requirements**

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

### **Minor Requirements**

Required Courses

3 Total Credits

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- Complete
  - SOC100 - INTRO TO SOCIOLOGY (3)

Electives

18 Total Credits

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- Complete all of the following
  - 6 hours from any SOC 100 - 400 level course(s)
  - 12 hours from any SOC 300 - 400 level course(s)

Grand Total Credits: **21**



## Technical Communication (Graduate Certificate)

### Program Description

The graduate certificate in Technical Communication prepares students for careers in technical communication, technical editing, proposal writing, and user experience. In preparation for future employment, certificate students get exposure to real-world documents and writing opportunities, both in class and through optional internships. Graduate certificate courses may also count toward an MA in English if the student meets admission requirements.

For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/certificates>.

### Number of Credit Hours

18

### Degree Requirements

- Rule Not Selected

### Major Requirements

Requirements

18 Total Credits

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- Complete all of the following
  - 6 hours from:
    - EH501 - THRY & PRACTICE TECHNICAL COMM (3)
    - EH603 - EDITING FOR PUBLICATION (3)
  - 9 hours from the following:  
EH 500 or 600-level courses related to technical communication.
  - 3 hours from the following:  
EH 600-level course related to technical communication.

Notes

0 Total Credits

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- No more than six credit hours taken at another institution may be applied to the certificate, and certificate courses taken at UAH must include EH 501 and EH 603.

Grand Total Credits: **18**

## Technical Writing (Minor)

### Program Description

The minor in Technical Writing prepares students for a career in technical writing by combining intensive writing training with practical experience and fundamental technical skills. Students with non-technical majors (e.g., English, Communication Arts) should plan early to take courses in technical or scientific fields. Students with technical majors (e.g., Engineering, Physics, Computer Science) will take additional courses focusing on writing and communication skills. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/english/programs/undergraduate>.

### Number of Credit Hours

21

### Minor Requirements

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH
  - Complete
    - EH301 - TECHNICAL WRITING (3)
    - EH302 - TECHNICAL EDITING (3)
    - EH320 - PRACTICUM IN WRITING (3)
    - EH401 - THEORY & PRACTICE IN TECH COMM (3)
  - Electives
  - Complete 1 of the following
    - All technical electives must be chosen with and approved by the Director of the Technical Writing program.  
Technical and Science Majors
    - 9 hours from the following:  
Arts, Humanities, and Social Science Electives
    - 9 hours from the following:  
Arts, Humanities, & Social Science and Business Majors
    - 9 hours from the following:  
Technical or science electives

Grand Total Credits: **21**

## Theatre (BA)

### Program Description

The BA in Theatre is designed to help students master the skills that employers value most, from public speaking and problem solving to creative thinking and collaboration. The end result is a diverse, well-rounded educational foundation that gives students a competitive edge no matter what career path they choose to pursue. The program has three areas of specialization: Performance, Technical, and Film and Media Arts. Each is designed to prepare a student for a smooth transition into the world of professional theatre. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/theatre/programs>.

### Number of Credit Hours

120

## **Degree Requirements**

### Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)

- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

14 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
  - 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 10 hours from the following:  
Literature, Humanities, Fine Arts, Mathematics, History, Science, or Social and Behavioral Sciences.  
These are additional classes that are not fulfilling the requirements above.

Grand Total Credits: **14**



## **Major Requirements**

Theatre Core Requirements

27 Total Credits

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- Complete all of the following
  - 12 hours from:
    - TH100 - STAGECRAFT (3)
    - TH150 - SCRIPT ANALYSIS (3)
    - TH425 - THEATRE MAINSTAGE (1 - 3)
    - TH431 - SENIOR CAPSTONE THEATRE (3)
  - 3 hours from:
    - TH221 - ACTING (3)
    - TH180 - READER'S THEATRE (3)
  - 3 hours from:
    - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)
    - TH260 - VIDEO PRODUCTION (3)
  - 3 hours from:
    - TH322 - THEATRE HISTORY I (3)
    - TH323 - THEATRE HISTORY II (3)
    - TH334 - HISTORY OF AMERICAN CINEMA (3)

Major Electives

- Complete all of the following
  - 6 hours from:
    - TH101 - THEATRE PRACTICUM (1)
    - TH122 - THEATRE APPRECIATION (3)
    - TH123 - INTRO TO FILM STUDIES (3)
    - TH200 - PLAYWRITING (3)
    - TH201 - THEATRE PRACTICUM (1)
    - TH301 - THEATRE PRACTICUM (1)
    - TH324 - MODERN AMERICAN THEATRE (3)
    - TH340 - SPECIAL TOPICS IN THEATRE (3)
    - TH475 - PORTFOLIO (3)
    - TH480 - DRAMATURGY (3)
    - EH461 - SHAKESPEARE I (3)
    - EH462 - SHAKESPEARE II (3)
    - TH465 - DIRECTING (3)
  - Any TH classes not taken in core or emphasis
  - Any ARS or MU class that has been approved by TH advisor

Minor Requirements

18 Total Credits

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- 18 hours from the following:  
Minor

General Electives

8 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 8
  - Elective hours vary by program, see advisor.

Grand Total Credits: **53**

#### **4-Year Plan**

Year 1

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Theatre (BA) - Design Technology (Concentration)**

### **Description**

The BA in Theatre with a concentration in Design Technology is designed to prepare students for a smooth transition into the world of professional theatre through courses that expand their knowledge of the different design and technical areas, hands-on participation in theatre productions, and the chance to build a professional resume while still in college through our local partnerships. Students graduate with a solid foundation in theatre and the knowledge of what comes next as they build their career. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/theatre>.

### **Concentration Requirements**

Concentration Requirements

12 Total Credits

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- 12 hours from:
  - TH250 - STAGE MAKEUP (3)
  - TH251 - COSTUME FUNDAMENTALS (3)
  - TH330 - STAGE MANAGEMENT (3)
  - TH355 - SCENE DESIGN (3)
  - TH365 - COSTUME DESIGN (3)
  - TH375 - SOUND DESIGN (3)
  - TH400 - INTERNSHIP IN THEATRE (0.5 - 3)

Grand Total Credits: **12**

## **Theatre (BA) - Dramaturgy (Concentration)**

### **Description**

The BA in Theatre with a concentration in Dramaturgy is designed to prepare students for a smooth transition into the world of professional theatre through courses that expand your knowledge of the theory, history, and practice of theatre. Deep dives into research-worthy topics and hands-on participation in theatre productions means that Dramaturgy students graduate with a solid foundation in theatre and the knowledge of what comes next as they build their career. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/theatre>.

## Theatre (BA) - Film & Media Arts (Concentration)

### Description

The BA in Theatre with a concentration in Film & Media Arts (FMA) is designed to prepare students for a smooth transition into visual and related media industries through courses that explore a wide range of production styles, hands-on participation in media productions, and personalized attention to their strengths as media performers. FMA students graduate with a solid foundation in visual media and the knowledge of what comes next as they build their career. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/theatre>.

### Concentration Requirements

Concentration Requirements

12 Total Credits

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- 12 hours from:
  - FMA334 - HISTORY OF AMERICAN CINEMA (3)
  - FMA340 - SP TOPICS FILM & MEDIA ARTS (3)
  - FMA360 - ADV VIDEO PRODUCTION (3)
  - FMA401 - INTERNSHIP IN VIDEO (3)
  - FMA431 - VIDEO CAPSTONE (3)
  - FMA450 - HISTORY OF HORROR (3)
  - FMA460 - STUDIO BROADCAST PRODUCTION (3)

Grand Total Credits: **12**

## Theatre (BA) - Performance (Concentration)

### Description

The BA in Theatre with a concentration in Performance is designed to prepare students for a smooth transition into the world of professional theatre through courses that explore a wide range of performance styles, hands-on participation in theatre productions, and personalized attention to their strengths as performers. Performance students graduate with a solid foundation in theatre and the knowledge of what comes next as they build their career. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/theatre>.

### Concentration Requirements

Concentration Requirements

12 Total Credits

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- 12 hours from:
  - TH180 - READER'S THEATRE (3)
  - TH321 - ACTING II (3)
  - TH390 - TEACHING THEATRE (3)
  - TH400 - INTERNSHIP IN THEATRE (0.5 - 3)
  - TH421 - ACTING III (3)
  - TH465 - DIRECTING (3)

Grand Total Credits: **12**

## Theatre (Minor)

## **Program Description**

The minor in Theatre allows students to merge their academic interests and their passion for the creative arts and earn a credential. Students pair Theater courses that fit their areas of interest with the required core to complete the minor. For further information, please refer to the department web site at

<https://www.uah.edu/ahs/departments/theatre/programs>.

## **Number of Credit Hours**

24

## **Degree Requirements**

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

## **Minor Requirements**

Required Courses

18 Total Credits

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- Complete all of the following
  - Complete
    - TH100 - STAGECRAFT (3)
    - TH150 - SCRIPT ANALYSIS (3)
    - TH221 - ACTING (3)
    - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)
  - 3 hours from:
    - TH322 - THEATRE HISTORY I (3)
    - TH323 - THEATRE HISTORY II (3)
  - 3 hours from:
    - TH425 - THEATRE MAINSTAGE (1 - 3)

Electives

6 Total Credits

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- 6 hours from:
  - TH110 - VOICE AND DICTION (3)
  - TH260 - VIDEO PRODUCTION (3)
  - TH321 - ACTING II (3)
  - TH322 - THEATRE HISTORY I (3)
  - TH323 - THEATRE HISTORY II (3)
  - TH324 - MODERN AMERICAN THEATRE (3)
  - TH330 - STAGE MANAGEMENT (3)
  - TH340 - SPECIAL TOPICS IN THEATRE (3)
  - TH355 - SCENE DESIGN (3)
  - Course Not Found
  - TH365 - COSTUME DESIGN (3)
  - TH375 - SOUND DESIGN (3)
  - TH390 - TEACHING THEATRE (3)
  - TH400 - INTERNSHIP IN THEATRE (0.5 - 3)
  - TH421 - ACTING III (3)
  - TH475 - PORTFOLIO (3)

Grand Total Credits: **24**

## **User Experience (Graduate Certificate)**

### **Program Description**

The graduate certificate in User Experience prepares students for careers in user experience (UX), which involves understanding users and designing better technologies, products, and services to meet users' needs. UX professionals conduct research, design prototypes, test products, and organize information, all to ensure that users' needs are met. This certificate provides students both foundational knowledge in UX and the opportunity to take electives in the many different disciplines that contribute to user experience knowledge and practice. For further information, please refer to the department web site at

<https://www.uah.edu/ahs/departments/english/programs/graduate>.

### **Number of Credit Hours**

18

### **Major Requirements**

Core Requirements

12 Total Credits

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- Complete all of the following
  - 3 hours from:
    - CM670 - ADVANCED COMMUNICATION METHODS (3)
  - 3 hours from:
    - EH542 - USABILITY STUDIES (3)
    - CM542 - USABILITY STUDIES (3)
  - 3 hours from:
    - EH552 - USER-CENTERED DESIGN (3)
    - CM552 - USER-CENTERED DESIGN (3)
  - 3 hours from:
    - EH662 - INFORMATION ARCHITECTURE (3)
    - CM662 - INFORMATION ARCHITECTURE (3)

Elective Requirements

6 Total Credits

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- Complete all of the following
  - 6 hours from any CM, CS, EH, MGT, MKT, or PY 500 - 700 level course(s)
  - Students choose electives in consultation with the Director of the User Experience Programs; in some cases, prerequisites may apply. Students can also complete an internship in UX as part of their certificate.

Grand Total Credits: **18**

## **User Experience (Minor)**

## **Program Description**

The minor in User Experience brings together several different disciplines to create a robust, rigorous, and multifaceted program. User experience (UX) refers to a user's engagement with a product, technology, or service. According to usability.gov, "User experience (UX) focuses on having a deep understanding of users, what they need, what they value, their abilities, and also their limitations." Since 2000, UX has become increasingly central to the success of businesses and organizations.

For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/ux-program>.

## **Number of Credit Hours**

24

## **Degree Requirements**

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

## **Minor Requirements**

Technical Course

3 Total Credits

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- Earned at least 1 of the following:
  - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
  - CS102 - INTRO TO C PROGRAMMING (3)
  - CS103 - INTRO PROGRAMMING USING JAVA (3)
  - CS104 - INTRO TO CS USING PYTHON (3)
  - IS210 - INTRO COMP PROG IN BUS (3)

Statistics Course

3 - 4 Total Credits

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- Complete 1 of the following
  - Earned at least 1 of the following:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - Complete
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)
  - Complete
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - SOC304 - STATISTICS LAB (1)

Required Courses

18 Total Credits

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- Complete all of the following
  - Complete
    - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
    - EH301 - TECHNICAL WRITING (3)
    - PY410 - TASK ANALYSIS & PROTOTYPING (3)
  - Earned at least 1 of the following:
    - ISE403 - HUMAN FACTORS PSYCHOLOGY (3)
    - PY403 - HUMAN FACTORS PSYCHOLOGY (3)
  - Earned at least 1 of the following:
    - CM452 - USER-CENTERED DESIGN (3)
    - EH452 - USER-CENTERED DESIGN (3)
  - Earned at least 1 of the following:
    - CM440 - PUBLIC RELATIONS CAMPAIGN (3)
    - EH442 - USABILITY STUDIES (3)

Grand Total Credits: **24 - 25**

## **Web Communication (Minor)**



### **Program Description**

The minor in Web Communications offers an interdisciplinary plan of study in web development with an emphasis on web design, user experience/UX, and web management. This program combines courses in graphic design (ARS), programming (CS), information systems (IS), marketing (MKT), and technical writing (EH) to prepare students for work in the growing field of web-based communication. When combined with an appropriate major, the program prepares students for work in a number of increasingly web-reliant fields, including marketing, public relations, journalism, graphic design, user experience/UX, technical communication, corporate communication, and publishing. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/art/programs/web-communications>.

### **Number of Credit Hours**

30

### **Degree Requirements**

- CAHS Minor
  - Complete all of the following
    - 25% of the minor must be earned at UAH
    - A minimum 2.0 GPA is required in the minor
    - 6 semester hours at the 300+ level must be earned at UAH

## **Minor Requirements**

- Complete all of the following
  - Graphic Design
    - Complete
      - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
      - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
      - ARS334 - GRAPH DES: WEB USER EXPER I (3)
      - ARS432 - GRAPH DES: SENIOR PROJ MGMT (3)
  - Interdisciplinary Experience
    - Complete
      - CS103 - INTRO PROGRAMMING USING JAVA (3)
      - EH301 - TECHNICAL WRITING (3)
      - MKT301 - PRINCIPLES OF MARKETING (3)
  - Elective Courses
    - Complete 1 of the following
      - Pick three from any group or pick three in an area of focus from the courses listed below
      - Group A: User Experience (UX)
        - Complete
          - ARS434 - GRAPH DES: WEB USER EXPER II (3)
          - CM435 - SOCIAL MEDIA (3)
          - EH442 - USABILITY STUDIES (3)
      - Group B: Web Writing and Social Media
        - Earned at least 3 of the following:
          - Course Not Found
          - CM313 - BUSINESS & PROFESSIONAL COMM (3)
          - CM435 - SOCIAL MEDIA (3)
          - CM444 - ADVERTISING (3)
      - Group C: Web and Marketing
        - Complete
          - MKT315 - SALES MGT/PROF SELLING (3)
          - MKT332 - BUYER BEHAVIOR (3)
          - MKT343 - MARKETING RESEARCH (3)
      - Group D: Information Systems
        - Complete
          - IS210 - INTRO COMP PROG IN BUS (3)
          - IS310 - ADVANCED PROGRAMMING (3)
          - IS340 - DATABASE MANAGEMENT (3)
      - Group E: Art Internship
        - Complete all of the following
          - Complete
            - ARS492 - ART INTERNSHIP (3)
          - 6 hours from the following:  
Options from Groups A through D

Grand Total Credits: **30**

## **Women's/Gender/Sexuality Studies (Minor)**

## **Program Description**

The minor in Women's, Gender, and Sexuality Studies program brings together courses and faculty from several colleges of the university to provide an interdisciplinary experience. As an area of scholarship, the principal focus is on the contributions, perspectives, and experiences of women in all areas of human endeavor, including the status, portrayal, or achievements of women in areas such as art, history, literature, science, business, engineering, and medicine. It also promotes greater understanding of gender and of sexuality as fundamental categories of meaning, examining the pervasive and often unacknowledged ways that gender and/or sexuality shape and change social institutions, individual knowledge, and interpersonal relationships. For further information, please see the department website at <https://www.uah.edu/ahs/departments/womens-and-gender-studies>.

## **Number of Credit Hours**

21

## **Minor Requirements**

- Complete all of the following
  - Complete
    - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
  - Core Courses
  - Complete all of the following
    - 9 hours from the following:  
Core Courses in at least 2 categories below; up to 6 Core Courses may be taken
    - No more than 6 semester hours within a single subject area.
    - No more than two of the courses applied to the minor can be from the student's major field of study. One course may count towards both the major and the minor.
    - Approved Special Topics courses may count as "Core" courses toward the minor. Current approved Special Topics "Core" courses are: ARH 320, EH 440, PSC 440, SOC 340, and WLC 204.
  - Education/Kinesiology
    - SFM385 - WOMEN IN SPORT (3)
  - Humanities
    - ARH320 - SPECIAL TOPICS IN ART HY (3)
    - EH414 - CREATIVE NONFICTION WRITING (3)
    - EH418 - REP TEXTS-WOMEN WRITERS (3)
    - EH461 - SHAKESPEARE I (3)
    - EH462 - SHAKESPEARE II (3)
    - EH465 - DRAMATIC LITERATURE (3)
    - HY367 - WOMEN IN U.S. HISTORY (3)
    - HY390 - GENDER & SEXUALITY MODERN EURO (3)
    - HY483 - GENDER & SEXUALITY LATIN AMERI (3)
    - PHL335 - FEMINIST PHILOSOPHY (3)
    - TH323 - THEATRE HISTORY II (3)
    - TH324 - MODERN AMERICAN THEATRE (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - Social Sciences
    - PSC440 - REGIONAL STUDIES (3)
    - PY406 - PSYCHOLOGY OF WOMEN (3)
    - SOC206 - MARRIAGE AND FAMILY (3)
    - SOC306 - SOCIOLOGY OF GENDER (3)
    - SOC309 - SOCIOLOGY OF SEXUALITY (3)
  - WGS Advanced Courses
    - WGS340 - SPECIAL TOPICS (1 - 3)
    - WGS499 - INDEPENDENT STUDY (1 - 3)
  - Elective Courses
  - Complete all of the following
    - 9 hours from the following:  
additional core courses or up to 3 elective courses from the following
    - Approved Special Topics courses may count as "Elective" courses toward the minor. Current approved Special Topics "Elective" courses are: PHL 403

#### Elective Options

- - ARH103 - ARH SUR: WORLD ART (3)
  - ARH309 - CONTEMPORARY ART HISTORY (3)
  - ARH410 - NINETEENTH CENTURY ART (3)
  - BYS437 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
  - CM330 - NONVERBAL COMMUNICATION (3)
  - CM333 - INTERPERSONAL COMMUNICATION (3)
  - CM433 - DARK SIDE INTERPERSONAL COMM (3)
  - EH242 - MYTHOLOGY (3)
  - EH403 - LITERARY CRITICISM & THEORY (3)
  - EH430 - THE AMERICAN NOVEL (3)
  - EH434 - SCIENCE FICTION (3)
  - EH438 - AFRICAN AMERICAN LITERATURE (3)
  - EH451 - ARTHURIAN ROMANCE (3)
  - HY370 - TECHNOLOGY IN AMERICAN HISTORY (3)
  - HY383 - FOOD AND WORLD HISTORY (3)
  - HY413 - THE OLD SOUTH (3)
  - HY414 - THE NEW SOUTH (3)
  - HY473 - U.S.-LATIN AMERICAN RELATIONS (3)
  - HY476 - BEING YOUNG MODERN MIDDLE EAST (3)
  - HY482 - COMPTV SLAVERY & ABOLITION (3)
  - HY484 - LATIN AMERICAN HIST THRU FILM (3)
  - HY485 - NAZI GERMANY AND THE HOLOCAUST (3)
  - PHL102 - INTRO TO ETHICS (3)
  - PHL303 - CONTINENTAL PHILOSOPHY (3)
  - PHL337 - PHILOSOPHY OF RACE (3)
  - PHL403 - ADV MORAL PHILOSOPHY (3)
  - PHL438 - CONTEMPORARY POLITICAL THOUGHT (3)
  - PSC438 - CONTEMPORARY POLITICAL THOUGHT (3)
  - PY330 - NONVERBAL COMMUNICATION (3)
  - PY375 - SOCIAL PSYCHOLOGY (3)
  - PY437 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
  - SOC330 - RACE AND ETHNICITY (3)
  - SOC375 - SOCIAL PSYCHOLOGY (3)
  - TH322 - THEATRE HISTORY I (3)
  - BYS437 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
  - SOC350 - MONEY AND POWER (3)
  - EH245 - LOVE &/OR ROMANCE (3)

Grand Total Credits: **21**

## Writing (BA)

### Program Description

The BA in Writing prepares students for careers in writing-related fields—such as technical writing, publishing, social media consulting, and public relations—or graduate studies in rhetoric and composition, communication, creative writing, education, or law. By combining courses from the English and Communication Arts departments, the program gives students a comprehensive education in writing and rhetorical theory along with the techniques necessary to craft effective documents in multiple genres. Its interdisciplinary nature is perfect for students who want to make writing central to their career. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### Number of Credit Hours

120

## **Degree Requirements**

### Degree Requirements

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- BA Degree Requirements (CAHS)
  - Complete all of the following
    - 30% of total degree requirements must be taken at 300 level or higher
    - Must have a 2.0 GPA in major, minor, and overall
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)

- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
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  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
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  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)

- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)

- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:



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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

20 Total Credits

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- Complete all of the following
  - Complete
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)

- 3 hours from:

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 16 hours from the following:

Literature, Humanities, Fine Arts, Mathematics, Lab Science, and Social and Behavioral Sciences.  
AHS 300 may also count as a pre-professional elective.

Grand Total Credits: **20**

## **Major Requirements**

Core Requirements

15 Total Credits

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- Complete all of the following
  - Complete
    - CM113 - PUBLIC SPEAKING (3)
    - CM310 - PERSUASION (3)
    - EH260 - INTRO TO WRITING MAJOR (2)
    - EH340 - ACADEMIC WRITING (3)
    - EH463 - CAPSTONE IN WRITING (1)

- Earned at least 1 of the following:
  - CM375 - RHETORICAL CRITICISM (3)
  - EH403 - LITERARY CRITICISM & THEORY (3)

#### Major Electives

6 Total Credits

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- Complete all of the following
  - 6 hours from:
    - CM205 - INTRO TO JOURNALISM (3)
    - CM220 - INTRO PUBLIC RELATIONS (3)
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
    - CM310 - PERSUASION (3)
    - CM375 - RHETORICAL CRITICISM (3)
    - Course Not Found
    - CM405 - ADVANCED MEDIA WRITING (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)
    - CM418 - LEGAL ARGUMENT (3)
    - CM420 - PUBLIC RELATIONS WRITING (3)
    - CM430 - MASS MEDIA IN AMERICA (3)
    - CM435 - SOCIAL MEDIA (3)
    - CM440 - PUBLIC RELATIONS CAMPAIGN (3)
    - CM444 - ADVERTISING (3)
    - EH211 - INTRO CREATIVE WRITING (3)
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
    - EH302 - TECHNICAL EDITING (3)
    - EH400 - COMPOSITION STUDIES FOR TCHERS (3)
    - Course Not Found
    - EH403 - LITERARY CRITICISM & THEORY (3)
    - EH410 - FICTION WRITING (3)
    - EH411 - POETRY WRITING (3)
    - EH412 - SPEC STUDIES CREATIVE WRITING (3)
    - EH414 - CREATIVE NONFICTION WRITING (3)
    - EH475 - RHETORIC AND WRITING (3)
    - ESL410 - INTRO TO LANGUAGE SYSTEMS (3)
    - ESL420 - INSTR & ACADMC LANG CNTNT DOMN (3)
    - EH454 - NEW MEDIA WRITING & RHETORIC (3)
    - CM454 - NEW MEDIA WRITING & RHETORIC (3)
    - EH260 - INTRO TO WRITING MAJOR (2)
  - Choose two not taken in concentration.

#### Major Requirements

18 Total Credits

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- 18 hours from the following:
  - Minor

#### General Electives

2 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 2
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **41**

#### **4-Year Plan**

Year 1

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - CM113 - PUBLIC SPEAKING (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101A - CHARGER SUCCESS - ART,HUM,SOCS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Mathematics
  - 3 Hours Social & Behavioral Science

Spring

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- Complete all of the following
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 hours from:
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - 3 hours from:
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - 3 Hours Social & Behavioral Science
  - 4 Hours Lab Science

Year 2

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - EH260 - INTRO TO WRITING MAJOR (2)
  - 3 Hours Literature
  - 3 Hours Social & Behavioral Science
  - 4 Hours Lab Science
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - CM375 - RHETORICAL CRITICISM (3)
    - EH403 - LITERARY CRITICISM & THEORY (3)
  - 3 Hours Literature
  - 3 Hours Minor Course
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Year 3

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No Rules

Fall

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- Complete all of the following
  - 3 Hours Writing Concentration Course
  - 3 Hours Writing Concentration Course
  - 3 Hours Communication Arts or English Elective
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course

Spring

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- Complete all of the following
  - 3 hours from:
    - EH340 - ACADEMIC WRITING (3)
  - 3 Hours Writing Concentration Course
  - 3 Hours Minor Course
  - 3 Hours Area V Charger Foundations Course
  - 3 Hours Area V Charger Foundations Course

Year 4

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - CM310 - PERSUASION (3)
  - 3 Hours Writing Concentration Course
  - 3 Hours Minor Course
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - Complete
    - EH463 - CAPSTONE IN WRITING (1)
  - 3 Hours Writing Concentration Course
  - 3 Hours Communication Arts or English Elective (300+ or 400+ Course)
  - 3 Hours Minor Course
  - 3 Hours General Elective

## **Writing (BA) - Creative Writing (Concentration)**

### **Description**

The BA in Writing with a concentration in Creative Writing allows students to focus on creative writing. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### **Concentration Requirements**

Concentration

18 Total Credits

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- Complete all of the following
  - Complete
    - EH211 - INTRO CREATIVE WRITING (3)
    - EH410 - FICTION WRITING (3)
    - EH411 - POETRY WRITING (3)
    - EH414 - CREATIVE NONFICTION WRITING (3)
  - 6 hours from the following:  
Literature Electives 300+: Choose six hours of EH 300+ literature courses.

Grand Total Credits: **18**

## **Writing (BA) - Customized (Concentration)**

### **Description**

The BA in Writing with a Customized concentration allows students to craft specialized programs in consultation with an advisor. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### **Concentration Requirements**

Concentration

18 Total Credits

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- 18 hours from the following:  
approved writing electives designed in consultation with an advisor to meet specific career goals.

Grand Total Credits: **18**

## **Writing (BA) - Media Writing (Concentration)**

### **Description**

The BA in Writing with a concentration in Media supplements the courses from the English and Communication Arts departments with an internship. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### **Concentration Requirements**

Concentration

18 Total Credits

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- Complete all of the following
  - Complete
    - CM205 - INTRO TO JOURNALISM (3)
    - CM405 - ADVANCED MEDIA WRITING (3)
    - EH414 - CREATIVE NONFICTION WRITING (3)
  - 3 hours from:
    - EH454 - NEW MEDIA WRITING & RHETORIC (3)
    - CM454 - NEW MEDIA WRITING & RHETORIC (3)
  - 3 hours from:
    - CM444 - ADVERTISING (3)
    - CM435 - SOCIAL MEDIA (3)
  - 3 hours from:
    - EH320 - PRACTICUM IN WRITING (3)
    - CM320 - PRACTICUM IN WRITING (1 - 3)

Grand Total Credits: **18**

## **Writing (BA) - Public Relations (Concentration)**

### **Description**

The BA in Writing with a concentration in Public Relations supplements the courses from the English and Communication Arts departments with an internship. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### **Concentration Requirements**

Concentration

18 Total Credits

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- 18 hours from:
  - CM205 - INTRO TO JOURNALISM (3)
  - CM220 - INTRO PUBLIC RELATIONS (3)
  - CM400 - INTERNSHIP (1 - 6)
  - CM405 - ADVANCED MEDIA WRITING (3)
  - CM418 - LEGAL ARGUMENT (3)
  - CM420 - PUBLIC RELATIONS WRITING (3)
  - CM440 - PUBLIC RELATIONS CAMPAIGN (3)

Grand Total Credits: **18**

## Writing (BA) - Rhetoric & Composition Writing (Concentration)

### Description

The BA in Writing with a concentration in Rhetoric & Composition allows students to focus on rhetoric & composition. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### Concentration Requirements

Concentration

18 Total Credits

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- Complete all of the following
  - Complete
    - CM310 - PERSUASION (3)
    - EH400 - COMPOSITION STUDIES FOR TCHERS (3)
    - EH475 - RHETORIC AND WRITING (3)
  - 3 hours from:
    - CM375 - RHETORICAL CRITICISM (3)
    - EH403 - LITERARY CRITICISM & THEORY (3)
  - 3 hours from:
    - CM454 - NEW MEDIA WRITING & RHETORIC (3)
    - EH454 - NEW MEDIA WRITING & RHETORIC (3)
  - 3 hours from:
    - CM408 - CLASSICAL RHET THEORY (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)

Grand Total Credits: **18**

## Writing (BA) - Technical & Professional Writing (Concentration)

### Description

The BA in Writing with a concentration in Technical & Professional Writing supplements the courses from the English and Communication Arts departments with an internship. For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

### Concentration Requirements

Concentration

15 Total Credits

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- Complete all of the following
  - Complete
    - EH301 - TECHNICAL WRITING (3)
    - EH302 - TECHNICAL EDITING (3)
    - EH320 - PRACTICUM IN WRITING (3)
    - Course Not Found
  - 6 hours from the following:  
Technical Electives: Choose six hours with faculty advisor.

Grand Total Credits: **15**

## Writing (Minor)



**Program Description**

The minor in Writing adopts an interdisciplinary approach by combining courses from the English and Communication Arts departments and is designed for students who want to enhance their writing skills in areas such as technical writing, publishing, social media consulting, and public relations.

For further information, please refer to the department web site at <https://www.uah.edu/ahs/departments/writing>.

**Number of Credit Hours**

21

## **Minor Requirements**

- Complete all of the following
  - CAHS Minor
    - Complete all of the following
      - 25% of the minor must be earned at UAH
      - A minimum 2.0 GPA is required in the minor
      - 6 semester hours at the 300+ level must be earned at UAH

### Required Minor Courses

- Complete all of the following
  - 6 hours from:
    - EH260 - INTRO TO WRITING MAJOR (2)
    - EH340 - ACADEMIC WRITING (3)
    - EH463 - CAPSTONE IN WRITING (1)
  - 3 hours from:
    - CM310 - PERSUASION (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)

### Elective Courses

- Complete all of the following
  - Choose four courses (4-6 hours at 300-level or above. Students may choose electives to focus on a particular type of writing, though this is not required. Students who take EH 302: Technical Editing (4 crs) can meet the 4-hour minimum 300-level requirement; all others should take at least 6 hours at the 300-level or above)
  - 12 hours from:
    - CM113 - PUBLIC SPEAKING (3)
    - CM205 - INTRO TO JOURNALISM (3)
    - CM220 - INTRO PUBLIC RELATIONS (3)
    - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
    - CM310 - PERSUASION (3)
    - CM375 - RHETORICAL CRITICISM (3)
    - CM405 - ADVANCED MEDIA WRITING (3)
    - CM409 - CONTEMPORARY RHETORICAL THEORY (3)
    - CM420 - PUBLIC RELATIONS WRITING (3)
    - CM430 - MASS MEDIA IN AMERICA (3)
    - CM440 - PUBLIC RELATIONS CAMPAIGN (3)
    - CM444 - ADVERTISING (3)
    - EH211 - INTRO CREATIVE WRITING (3)
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
    - EH302 - TECHNICAL EDITING (3)
    - EH400 - COMPOSITION STUDIES FOR TCHERS (3)
    - EH401 - THEORY & PRACTICE IN TECH COMM (3)
    - EH403 - LITERARY CRITICISM & THEORY (3)
    - EH410 - FICTION WRITING (3)
    - EH411 - POETRY WRITING (3)
    - EH412 - SPEC STUDIES CREATIVE WRITING (3)
    - EH413 - CHILDREN'S & ADOLESCENT LIT (3)
    - EH414 - CREATIVE NONFICTION WRITING (3)
    - TH260 - VIDEO PRODUCTION (3)
    - ESL410 - INTRO TO LANGUAGE SYSTEMS (3)
    - ESL420 - INSTR & ACADMC LANG CNTNT DOMN (3)

Grand Total Credits: **21**

## **College of Business**

### **Accounting (BSBA)**

## **Program Description**

The BSBA in Accounting prepares students to become accounting professionals. Students can obtain this BSBA through one of the two concentrations available (described below). For further information, please refer to the department website at <https://www.uah.edu/business/undergraduate/accounting>.

## **Number of Credit Hours**

120

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:
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      - Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARS160 - DRAWING: FOUNDATIONS (3)
        - MU100 - INTRO TO MUSIC LITERATURE (3)
        - TH122 - THEATRE APPRECIATION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area II: Humanities and Fine Arts - Literature
        - EH207 - READINGS LITERATURE/CULTURE I (3)
        - EH208 - READINGS LITERATURE/CULTURE 2 (3)
        - EH241 - LITERATURE WITHOUT BORDERS (3)
        - EH242 - MYTHOLOGY (3)
        - EH243 - PROTEST LITERATURE (3)
        - EH244 - HEROES &/OR MONSTERS (3)
        - EH245 - LOVE &/OR ROMANCE (3)

- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)

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- Area II: Humanities and Fine Arts - WLC 101
  - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
  - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
  - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
  - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
  - WLC101MS - INTRO TO MEDICAL SPANISH (3)
  - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
  - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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- Area II: Humanities and Fine Arts - WLC 102
  - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
  - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
  - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
  - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
  - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
  - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
  - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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- Area II: Humanities and Fine Arts - WLC 201
  - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
  - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
  - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
  - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
  - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
  - WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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- Area II: Humanities and Fine Arts - WLC 202
  - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
  - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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- Area II: Humanities and Fine Arts - Fine Arts
  - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
  - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
  - ARH103 - ARH SUR: WORLD ART (3)
  - ARS160 - DRAWING: FOUNDATIONS (3)
  - MU100 - INTRO TO MUSIC LITERATURE (3)
  - TH122 - THEATRE APPRECIATION (3)
  - FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following
      - 3 hours from:  
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Area III: Mathematics and Sciences - Mathematics
        - MA105 - NATURE OF MATHEMATICS (3)
        - MA107 - ALGEBRA WITH APPLICATIONS (3)
        - MA110 - FINITE MATHEMATICS (3)
        - MA112 - PRECALCULUS ALGEBRA (3)
        - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
        - MA113 - PRECALCULUS TRIGONOMETRY (3)
        - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
        - MA171 - CALCULUS I (4)
        - MA181 - INTRODUCTION TO STATISTICS (3)
        - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
        - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
      - 8 hours from:  
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Area III: Mathematics and Sciences - Sciences
        - AST100 - SURVEY OF ASTRONOMY (4)
        - AST106 - EXPLORING THE COSMOS I (4)
        - AST107 - EXPLORING THE COSMOS II (4)
        - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
        - BYS119 - PRINCIPLES OF BIOLOGY (3)
        - BYS120 - ORGANISMAL BIOLOGY (3)
        - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
        - BYS122 - ORGANISMAL BIOLOGY LAB (1)
        - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
        - CH101 - INTRO TO CHEMISTRY (3)
        - CH105 - INTRO CHEMISTRY LAB (1)
        - CH121 - GENERAL CHEMISTRY I (3)
        - CH121M - GENERAL CHEMISTRY I M (3)
        - CH123 - GENERAL CHEMISTRY II (3)
        - CH125 - GENERAL CHEMISTRY LAB I (1)
        - CH126 - GENERAL CHEMISTRY LAB II (1)
        - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
        - PH100 - CONCEPTUAL PHYSICS (4)
        - PH101 - GENERAL PHYSICS I (4)
        - PH102 - GENERAL PHYSICS II (4)
        - PH111 - GEN PHYSICS W/CALCULUS I (3)
        - PH112 - GEN PHYSICS W/CALC II (3)
        - PH113 - GEN PHYSICS W/CALC III (3)
        - PH114 - GENERAL PHYSICS LAB I (1)
        - PH115 - GENERAL PHYSICS LAB II (1)
        - PH116 - GENERAL PHYSICS LAB III (1)
        - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
        - AES104 - WEATHER & CLIMATE CHANGE (4)
    - Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better. If a student has been placed directly into MA 120, a grade of C- or better is required.

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:  
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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

- Business students must choose both ECN 142 and ECN 143 to satisfy six (6) credits towards Area IV: Social and Behavioral Sciences in Charger Foundations.
- Business students must choose from PSC 101, PY 101, SOC 100, or SOC 103 to satisfy three (3) credits towards Area IV: Social and Behavioral Sciences in Charger Foundations

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

29 - 31 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - Accounting majors taking ACC 211 and ACC 212 must score a grade of C- or better in both. Accounting majors that have taken ACC 210 must score a grade of C- or better.
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **29 - 31**

## **Major Requirements**

Business Core

24 Total Credits

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- Complete all of the following
  - Earn minimum Core GPA of 2.0
  - 21 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

Grand Total Credits: **24**

## **Accounting (BSBA) - Accounting Federal Contract (Concentration)**



## **Description**

The BSBA in Accounting with a Federal Contract Accounting concentration is a specialization that prepares students for careers in government contracting and accounting. It covers topics such as cost accounting, auditing, internal control, and federal acquisition regulation compliance. The program is designed to prepare students for careers in accounting, auditing, and other financial management positions with the federal government. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/accounting>.

## **Concentration Requirements**

Concentration Requirements

21 Total Credits

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- Complete all of the following
  - 18 hours from:
    - ACC308 - ACCOUNTING INFORMATION SYS I (3)
    - ACC310 - INTERM FINANCIAL ACCT I (3)
    - ACC408 - ACCOUNTING INFORMATION SYS II (3)
    - ACC414 - COST ACCOUNTING (3)
    - ACC431 - PRINCIPLES OF AUDITING (3)
    - ACC440 - BASIC GOV CONTRACT ACCTG (3)
  - 3 hours from:
    - MGT401 - INTRO TO CONTRACT MANAGEMENT (3)
    - MGT402 - CONTRACT EVALUATION & AWARD (3)
    - MGT403 - CONTRACT PRICING & COST ANALYS (3)
    - BLS406 - GOVERNMENT CONTRACT LAW (3)

General Electives

3 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 3
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **24**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art

- 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 9 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 9 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Non-Literature Humanities
  - 3 Hours Humanities or Fine Art

Year 3

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Fall

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- 15 hours from:
  - ACC310 - INTERM FINANCIAL ACCT I (3)
  - FIN301 - PRINCIPLES OF FINANCE (3)
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - ACC308 - ACCOUNTING INFORMATION SYS I (3)

- CM313 - BUSINESS & PROFESSIONAL COMM (3)
- MSC385 - OPERATIONS ANALYSIS (3)
- 3 hours from:
  - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
  - EH301 - TECHNICAL WRITING (3)
- 3 Hours Economics Elective (ECN 300+ or 400+ Course)

Year 4

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Fall

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- Complete all of the following
  - 9 hours from:
    - ACC408 - ACCOUNTING INFORMATION SYS II (3)
    - ACC414 - COST ACCOUNTING (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 9 hours from:
    - ACC431 - PRINCIPLES OF AUDITING (3)
    - ACC440 - BASIC GOV CONTRACT ACCTG (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from:
    - MGT401 - INTRO TO CONTRACT MANAGEMENT (3)
    - MGT402 - CONTRACT EVALUATION & AWARD (3)
    - MGT403 - CONTRACT PRICING & COST ANALYS (3)
    - BLS406 - GOVERNMENT CONTRACT LAW (3)

## **Accounting (BSBA) - Accounting, General (Concentration)**

### **Description**

The BSBA in Accounting with a General concentration prepares students for various careers in accounting, such as financial reporting, assurance, budget analysis, tax accounting, and federal contract accounting. The program teaches sound principles and concepts as well as the analytical tools for applications to practical business problems. Accountants may work for public accounting firms, public or private corporations, governments at all levels, or for themselves in private practice. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/accounting>.

## **Concentration Requirements**

### Concentration Requirements

21 Total Credits

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- 21 hours from:
  - ACC308 - ACCOUNTING INFORMATION SYS I (3)
  - ACC310 - INTERM FINANCIAL ACCT I (3)
  - ACC311 - INTERM FINANCIAL ACCT II (3)
  - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)
  - ACC408 - ACCOUNTING INFORMATION SYS II (3)
  - ACC414 - COST ACCOUNTING (3)
  - ACC431 - PRINCIPLES OF AUDITING (3)

### General Electives

3 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 3
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **24**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

### Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science

- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 9 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science
  - 3 Hours Literature

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Non-Literature Humanities
  - 3 Hours Humanities or Fine Art

Year 3

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Fall

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- 15 hours from:
  - ACC310 - INTERM FINANCIAL ACCT I (3)
  - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC308 - ACCOUNTING INFORMATION SYS I (3)
    - ACC311 - INTERM FINANCIAL ACCT II (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

Year 4

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ACC408 - ACCOUNTING INFORMATION SYS II (3)
    - ACC414 - COST ACCOUNTING (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)

Spring

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- Complete all of the following
  - 6 hours from:
    - ACC431 - PRINCIPLES OF AUDITING (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours General Elective

## **Accounting (BSBA) - JUMP: BSBA Accounting, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Accounting to one of six master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_ACC@uah.edu

### **JUMP Landing (Graduate Program)**

MACC@uah.edu or

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MSIS\_IS@uah.edu or

MS\_SCLM@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MACC ACC
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MSIS IS
  - Admitted to: MS SCLM

## **Accounting (MACC)**

### **Program Description**

The Master of Accountancy (MACC) in Accounting program provides students with the knowledge and skills they need to succeed in a career in accounting. The program is designed to prepare students for the Certified Public Accountant (CPA) exam and for positions in public accounting, industry, government, and academia. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/macc>.

### **Number of Credit Hours**

30

## **Degree Requirements**

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- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

### Program Prerequisites

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- Complete all of the following
  - Program prerequisites include a bachelor's degree in any field and satisfactory (i.e., "C" or higher) completion of the following courses within business prerequisites and accounting prerequisites.
  - Business Prerequisites
  - Complete all of the following
    - Written and oral communications
    - Calculus or MA 120 equivalent
    - Computer applications
    - Statistical analysis
    - Legal environment of business
    - Principles of accounting (financial and managerial); economics; finance; marketing; management
    - Principles of economics
    - Operations management
    - Organizational theory, behavior, and environment
  - Accounting Prerequisites
  - - ACC308 - ACCOUNTING INFORMATION SYS I (3)
    - ACC310 - INTERM FINANCIAL ACCT I (3)
    - ACC311 - INTERM FINANCIAL ACCT II (3)
    - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)
    - ACC408 - ACCOUNTING INFORMATION SYS II (3)
    - ACC414 - COST ACCOUNTING (3)
    - ACC431 - PRINCIPLES OF AUDITING (3)



## **Major Requirements**

Major Requirements

30 Total Credits

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- Complete all of the following
  - 24 hours from:
    - ACC513 - CORPORATE & PARTNERSHIP TAXATN (3)
    - ACC515 - ADV FINANCIAL ACCOUNTING (3)
    - ACC516 - ADVANCED COST ACCOUNTING (3)
    - ACC517 - ACC FOR STATE/LOCAL GOV/NON-PR (3)
    - ACC603 - FIN ACTG PROBLEMS & ANALYSIS (3)
    - ACC607 - ACCOUNTING ANALYTICS (3)
    - ACC613 - TAX RESEARCH (3)
    - ACC642 - ADV AUDITING TOPICS (3)
  - 3 hours from any ACC 500 - 600 level course(s)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 500 - 600 level course(s)
  - ACC 600 and ACC 602 may not be used in the MAcc Program.
  - Courses numbered 600 cannot be used.

Grand Total Credits: **30**

## **Accounting (Minor)**

### **Program Description**

The minor in Accounting provides students with the knowledge and skills they need to understand financial statements, accounting functions like cost accounting and auditing, and individual and small business taxes. It is a useful complement to any major for those interested in financial record-keeping, regulations, reporting, and taxes. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/accounting>.

### **Number of Credit Hours**

18

## **Minor Requirements**

- Complete 1 of the following  
ACC 210 Pathway
  - Complete all of the following
    - 7 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
      - ACC310 - INTERM FINANCIAL ACCT I (3)
    - 12 hours from:
      - ACC308 - ACCOUNTING INFORMATION SYS I (3)
      - ACC311 - INTERM FINANCIAL ACCT II (3)
      - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)
      - ACC414 - COST ACCOUNTING (3)
      - ACC431 - PRINCIPLES OF AUDITING (3)
- ACC 211-212 Pathway
  - Complete all of the following
    - 9 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
      - ACC310 - INTERM FINANCIAL ACCT I (3)
    - 9 hours from:
      - ACC308 - ACCOUNTING INFORMATION SYS I (3)
      - ACC311 - INTERM FINANCIAL ACCT II (3)
      - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)
      - ACC414 - COST ACCOUNTING (3)
      - ACC431 - PRINCIPLES OF AUDITING (3)

Grand Total Credits: **18 - 19**

## **Analytics (BSBA)**

### **Number of Credit Hours**

120

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)

- EH105 - HONORS ENGLISH SEMINAR (3)
- 3 hours from the following:  
Any General Elective

## Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)
    - keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - WLC 101
      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
      - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
      - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
      - WLC101MS - INTRO TO MEDICAL SPANISH (3)
      - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
      - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
    - keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - WLC 102
      - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
      - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
      - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)

- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)

- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following

- 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)

- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)
- Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better.

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
        - PY101 - GENERAL PSYCHOLOGY I (3)
        - PY201 - LIFE-SPAN DEVELOPMENT (3)
        - SOC100 - INTRO TO SOCIOLOGY (3)
        - SOC103 - INTRO TO CRIMINOLOGY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
    - Business students must choose both ECN 142 and ECN 143 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

**Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

29 - 31 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **29 - 31**

## **Major Requirements**

Business Core

24 Total Credits

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- Complete all of the following
  - 21 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

Major Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - IS210 - INTRO COMP PROG IN BUS (3)
    - IS340 - DATABASE MANAGEMENT (3)
    - IS471 - BUSINESS ANALYTICS & AI (3)
    - MSC450 - INTRO ANALYTICS & PROGRAM (3)
    - MSC469 - VISUALIZATION FOR LEADERSHIP (3)
  - 6 hours from:
    - IS310 - ADVANCED PROGRAMMING (3)
    - MKT343 - MARKETING RESEARCH (3)
    - ECN480 - INTRO TO ECONOMETRICS (3)
    - ECN490 - SPECIAL PROJECTS (3)
    - FIN490 - SPECIAL PROJECTS (3)
    - IS490 - SPECIAL PROJECTS (3)
    - MSC490 - SPECIAL PROJECTS (3)
  - Special Projects courses are by Chair Approval only.

General Electives

3 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 3
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **48**



## **Analytics (BSBA) - JUMP: BSBA Analytics, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Analytics to one of six master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MGT@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MSIS\_IS@uah.edu or

MS\_SCLM@uah.edu or

MS\_CBSB@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MSIS IS
  - Admitted to: MS SCLM
  - Admitted to: MS CBSB

## **Analytics (Minor)**

### **Program Description**

In the data-driven business world, analysts play a crucial role, using advanced technologies to derive insights and drive growth across functions like supply chain, finance, and more. Analytical skills are vital in every business discipline, ensuring informed decision-making and sustainable success. The analytics minor develops these essential analytical skills to complement a student's chosen field.

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Earned at least 1 of the following:
    - IS210 - INTRO COMP PROG IN BUS (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Complete
    - IS340 - DATABASE MANAGEMENT (3)
    - IS471 - BUSINESS ANALYTICS & AI (3)
    - MSC450 - INTRO ANALYTICS & PROGRAM (3)
    - MSC469 - VISUALIZATION FOR LEADERSHIP (3)
  - Earned at least 1 of the following:
    - IS310 - ADVANCED PROGRAMMING (3)
    - MKT343 - MARKETING RESEARCH (3)
    - ECN480 - INTRO TO ECONOMETRICS (3)
    - ECN490 - SPECIAL PROJECTS (3)
    - FIN490 - SPECIAL PROJECTS (3)
    - IS490 - SPECIAL PROJECTS (3)
    - MSC490 - SPECIAL PROJECTS (3)
  - Special Projects courses are by Chair approval only.

Grand Total Credits: **18**

## **Business Analytics (Graduate Certificate)**

### **Program Description**

The graduate certificate in Business Analytics prepares graduates to employ contemporary business analytics techniques and systems in commercial and governmental environments, and provides students with an understanding of their importance in organizations and their power to enhance organizational performance. Because it is a graduate program, some of the credit hours earned in the business analytics certificate program can also be applied toward a master's degree. All credits hours earned in the business analytics certificate program can also be applied toward the MS in Business Analytics. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### **Number of Credit Hours**

15

### **Major Requirements**

Requirements

15 Total Credits

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- Complete all of the following
  - Complete
    - IS571 - BUSINESS ANALYTICS & AI (3)
    - MSC550 - INTRO ANALYTICS & PROGRAMMING (3)
    - MSC600 - QUANTITATIVE METHODS (3)
    - MSC641 - ADVANCED ANALYTICS (3)
  - Earned at least 1 of the following:
    - MSC610 - MODELING & SIMULATION (3)
    - MSC615 - DECISION MODELING (3)
  - Students whose previous studies include the undergraduate equivalent of IS 571 must substitute a 3-credit-hour graduate course.
  - Students whose previous studies include the undergraduate equivalent of MSC 600 may substitute a 3-credit-hour graduate-level course.

Grand Total Credits: **15**

## **Business Analytics (MS)**

### **Program Description**

The MS in Business Analytics prepares students for a career that applies and manages modern data science to solve critical business challenges. It consists of courses that cover topics such as data mining, machine learning, statistical methods, and business problem solving using R and Python. The program is designed to provide students with real-world experience and industry connections through strong community partnerships and faculty expertise. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/analytics>.

### **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

- Complete all of the following
  - Complete
    - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)
    - IS571 - BUSINESS ANALYTICS & AI (3)
    - IS640 - DATA MGT AND DATA MINING (3)
    - MSC550 - INTRO ANALYTICS & PROGRAMMING (3)
    - MSC600 - QUANTITATIVE METHODS (3)
    - MSC605 - OPERATIONS MANAGEMENT (3)
    - MSC610 - MODELING & SIMULATION (3)
    - MSC615 - DECISION MODELING (3)
    - MSC641 - ADVANCED ANALYTICS (3)
    - MSC692 - BUSINESS ANALYTICS PRACTICUM (3)
  - Students whose previous studies include the undergraduate equivalents of ACC 600 and/or MSC 600 can substitute a 3-credit-hour graduate-level course for each applicable course.

Grand Total Credits: **30**

## **Business (Minor)**

### **Program Description**

The minor in Business provides students from other colleges with a broad knowledge of the functional areas of business. Some courses can be counted from the Charger Foundations or the major requirements. The business minor can facilitate any career goals that require business skills and knowledge and complement a variety of majors. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/minors>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Not admitted to BSBA ACC, BSBA FINANCE, BSBA GEN BUS, BSBA IS, BSBA MGT, BSBA MKT, or BSBA ANA
  - Earned at least 1 of the following:
    - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
  - Complete
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
  - Earned at least 1 of the following:
    - MSC287 - BUSINESS STATISTICS I (3)
    - ISE391 - PROB/ENGR STAT II (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - ST281 - ELEMENTS OF STAT ANALYSIS (3)

Grand Total Credits: **21 - 22**

## **Cybersecurity (MS)**

### **Program Description**

The MSCBS in Cybersecurity teaches students how to manage information systems security effectively and efficiently. Courses cover topics such as network security, computer forensics, data security, and security failures. The program is accredited by the National Security Agency (NSA) and the Department of Homeland Security (DHS) and provides students with opportunities for real-world experience with leading companies and agencies in Huntsville. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mscbs>.

### **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

### Cybersecurity Core Courses

9 Total Credits

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- Complete all of the following
  - 3 hours from:
    - IS550 - CYBERSECURITY MANAGEMENT (3)
  - 3 hours from:
    - IS663 - COMPUTER FORENSICS (3)
    - CS580 - MOBILE DIGITAL FORENSICS (3)
  - MS Cybersecurity students whose previous studies include the undergraduate equivalents of IS 501, IS 550, IS 560, IS 571, and/or IS 577 must substitute a 3-credit-hour graduate-level IS course for each applicable course.
  - Capstone
  - Complete all of the following
    - 3 hours from:
      - IS692 - CYBERSECURITY PRACTICUM (3)
    - should be taken toward the end of the student's program. Students must earn a grade of B- or better in the capstone course.

### Management Track Required Courses

15 Total Credits

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- Complete all of the following
  - 12 hours from:
    - IS501 - CYBERSECURITY PRINCIPLES (3)
    - IS560 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS577 - NETWORK DEFENSE & SECURITY (3)
    - IS670 - BUSINESS CONTINGENCY PLANNING (3)

- 3 hours from:
  - IS580 - SEMINAR IN MGT INFO SYSTEMS (3)
  - IS650 - SELECTED RESEARCH TOPICS (3)
- MS Cybersecurity students whose previous studies include the undergraduate equivalents of IS 501, IS 550, IS 560, IS 571, and/or IS 577 must substitute a 3-credit-hour graduate-level IS course for each applicable course.
- IS 650: Students may substitute an IS course approved by the Department Chair.

#### Electives

6 Total Credits

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- Complete all of the following
  - 6 hours from:
    - IS571 - BUSINESS ANALYTICS & AI (3)
    - IS640 - DATA MGT AND DATA MINING (3)
    - CPE534 - OPERATING SYSTEMS (3)
    - CPE645 - APPLIED CRYPTOGRAPHY (3)
    - CPE646 - WIRELESS SENSOR NETWORKS (3)
    - CPE647 - UBIQUITOUS COMPUTING (3)
    - CPE648 - ADVANCED COMPUTER NETWORKS (3)
    - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
    - CS685 - APPLIED CRYPTOGRAPHY (3)
    - CS687 - DATABASE SYSTEMS (3)
    - CS553 - CLIENT/SERVER ARCHITECTURES (3)
    - CS565 - NETWORK SECURITY (3)
    - CS617 - DES & ANALY OF ALGORITHM (3)
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS670 - WIRELESS SENSOR NETWORKS (3)
    - CS690 - ADVANCED OPERATING SYSTEMS (3)
  - Students are required to satisfy the prerequisites for any elective they choose. Students who wish to substitute some other courses as directed electives may seek prior approval for such a substitution by contacting the Graduate Advisor in the College of Business.

Grand Total Credits: **30**

## Cybersecurity Studies (Graduate Certificate)

### Program Description

The graduate certificate in Cybersecurity Studies is a specialized program that is designed to prepare students for a range of career opportunities within the cybersecurity field. UAH is certified as a national Center of Academic Excellence in Information Assurance/Cyber Defense Education. The certificate program covers topics including cryptography, data and information security, network defense, and digital forensics. A subset of these certificate courses may be used to satisfy requirements for the MS in Information Systems and MS Cybersecurity - Management Track programs. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### Number of Credit Hours

15

### Major Requirements

Requirements

15 Total Credits

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- Complete all of the following
  - Complete
    - IS501 - CYBERSECURITY PRINCIPLES (3)
    - IS550 - CYBERSECURITY MANAGEMENT (3)
    - IS560 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS577 - NETWORK DEFENSE & SECURITY (3)
    - IS663 - COMPUTER FORENSICS (3)
  - Students whose previous studies include the undergraduate equivalent of IS 501, IS 550, IS 560, and/or IS 577 must substitute a 3-credit-hour graduate-level course.

Grand Total Credits: **15**

## Economics & Computational Analysis (BS)

### Program Description

The BS in Economics & Computational Analysis teaches students how to think critically and analytically about complex issues and problems in the world. It combines economic models, computational tools, and quantitative methods to improve decision-making, evaluate strategies, identify opportunities, and analyze public policy. Graduates of the program are well-positioned for careers in government, business, academia, and other fields where the ability to think critically and make sound economic decisions is essential. Students are required to pursue a minor or double major in another discipline to enhance their skills and knowledge. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/economics>.

### Number of Credit Hours

120

### General Education (Charger Foundations) Requirements

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).



## Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

## Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)

- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)

- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)

- MA151 - CALCULUS I WITH FOUNDATIONS B (3)
- 8 hours from:
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  - Area III: Mathematics and Sciences - Sciences
    - AST100 - SURVEY OF ASTRONOMY (4)
    - AST106 - EXPLORING THE COSMOS I (4)
    - AST107 - EXPLORING THE COSMOS II (4)
    - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH121M - GENERAL CHEMISTRY I M (3)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
    - PH100 - CONCEPTUAL PHYSICS (4)
    - PH101 - GENERAL PHYSICS I (4)
    - PH102 - GENERAL PHYSICS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:
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        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)
          - HY104 - WORLD HISTORY SINCE 1500 (3)
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences -US
          - HY221 - UNITED STATES TO 1877 (3)
          - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)
          - HY104 - WORLD HISTORY SINCE 1500 (3)
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences -US
          - HY221 - UNITED STATES TO 1877 (3)
          - HY222 - UNITED STATES SINCE 1877 (3)
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      - Area IV - History, Social and Behavioral Sciences - SBS
        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)

- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)
- BS-ECA students must choose both ECN 142 and ECN 143 to satisfy both Area IV: Social and Behavioral Sciences in Charger Foundations and Lower Division Economics Degree Requirements.

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

10 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - 9 hours from:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)

Grand Total Credits: **10**

## **Major Requirements**

Major Requirements

24 Total Credits

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- Complete all of the following
  - 12 hours from:
    - ECN340 - MACRO ECONOMIC ANALYSIS (3)
    - ECN345 - MICRO ECONOMIC ANALYSIS (3)
    - ECN411 - ECONOMICS INFORMATION TECH (3)
    - ECN475 - LABOR ECONOMICS (3)
  - 12 hours from:
    - ECN352 - MONEY AND BANKING (3)
    - ECN406 - SPORTS ECONOMICS (3)
    - ECN445 - APPLIED GAME THEORY (3)
    - ECN461 - ECONOMIC DEVELOPMENT (3)
    - ECN470 - SEMINAR IN ECONOMICS (3)
    - ECN480 - INTRO TO ECONOMETRICS (3)
    - ECN490 - SPECIAL PROJECTS (3)
    - ECN499 - AGENT-BASED COMPUTA ECON (3)
    - FIN454 - INTERNATIONAL FINANCE (3)
    - FIN490 - SPECIAL PROJECTS (3)

Minor Requirements

21 Total Credits

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- Complete all of the following
  - 21 hours from the following:
    - Minor or Second Major
  - Minor Requirements are waived for Second Bachelor's Degree students.

General Electives

24 Total Credits

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- Complete all of the following
  - 9 hours from any 100 - 400 level course(s)
  - 15 hours from any 300 - 400 level course(s)

Grand Total Credits: **69**

## **4-Year Plan**

Year 1

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No Rules

Fall

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- Complete all of the following
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - Course Not Found
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
    - MA112 - PRECALCULUS ALGEBRA (3)

■ MA112S - PRECALCULUS ALGEBRA S-SECTION (3)

- 3 Hours Fine Art
- 3 Hours History
- 3 Hours Non-Literature Humanity

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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No Rules

Fall

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- Complete all of the following
  - 6 hours from:
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 3 Hours Literature
  - 4 Hours Lab Science
  - 3 Hours Minor Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN340 - MACRO ECONOMIC ANALYSIS (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Humanities or Fine Art
  - 3 Hours Minor Elective
  - 3 Hours General Elective

Year 3

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - ECN345 - MICRO ECONOMIC ANALYSIS (3)
  - 3 hours Economics elective (ECN 300+ or 400+ course)
  - 6 Hours Minor Electives
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours Economics elective (ECN 300+ or 400+ course)
  - 3 Hours Minor Elective

- 6 Hours General Electives (300+ or 400+ Courses)
- 3 Hours General Elective

Year 4

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No Rules

Fall

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- Complete all of the following
  - 6 hours from:
    - ECN411 - ECONOMICS INFORMATION TECH (3)
    - ECN475 - LABOR ECONOMICS (3)
  - 3 hours Economics elective (ECN 300+ or 400+ course)
  - 3 Hours Minor Elective
  - 3 Hours General Elective (300+ or 400+ course)

Spring

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- Complete all of the following
  - 3 hours Economics Elective (ECN 300+ or 400+ Course)
  - 3 Hours Minor Elective
  - 6 Hours General Electives (300+ or 400+ Courses)



## **Economics & Computational Analysis (BS) - JUMP: BS Economics & Computational Analytics, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Information Systems to one of six master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_ECA@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MSIS\_IS@uah.edu or

MS\_SCLM@uah.edu or

MS\_CBSB@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MSIS IS
  - Admitted to: MS SCLM
  - Admitted to: MS CBSB

## **Economics (Minor)**

### **Program Description**

The minor in Economics provides students with the knowledge and skills they need to understand the economy and how it works. The program is designed to complement any major, and is a great option for students who are interested in learning more about the economy. Students learn the economic way of thinking, and gain the knowledge and skills they need to succeed in a variety of careers. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/economics>.

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Complete
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - ECN340 - MACRO ECONOMIC ANALYSIS (3)
    - ECN345 - MICRO ECONOMIC ANALYSIS (3)
  - Earned at least 2 of the following:
    - ECN352 - MONEY AND BANKING (3)
    - ECN406 - SPORTS ECONOMICS (3)
    - ECN411 - ECONOMICS INFORMATION TECH (3)
    - ECN445 - APPLIED GAME THEORY (3)
    - ECN454 - INTERNATIONAL ECONOMICS (3)
    - ECN461 - ECONOMIC DEVELOPMENT (3)
    - ECN470 - SEMINAR IN ECONOMICS (3)
    - ECN475 - LABOR ECONOMICS (3)
    - ECN480 - INTRO TO ECONOMETRICS (3)
    - ECN499 - AGENT-BASED COMPUTA ECON (3)

Grand Total Credits: **18**

## **Enterprise Resource Planning (Graduate Certificate) (Fully Online)**

### **Program Description**

The graduate certificate in Enterprise Resource Planning is designed for students who want a more in-depth knowledge of enterprise systems, systems that provide solutions to an integrated business organization. As a member of the SAP University Alliance, students will have the opportunity to get hands-on experience using SAP - an industry leading enterprise system. Students completing the certificate will also be well positioned to obtain certification as an SAP Business Associate (TERP 10). A subset of the certificate courses may be used to satisfy some requirements for the MS-Information Systems, MS-Supply Chain Management, MS-Business Analytics, or the MBA program. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

15

### **Major Requirements**

Requirements

15 Total Credits

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- Complete all of the following
  - Complete
    - IS522 - SUPPLY CHAIN MANAGEMENT SYS (3)
    - IS571 - BUSINESS ANALYTICS & AI (3)
    - IS601 - MANAGEMENT OF INFORMATION TECH (3)
    - IS640 - DATA MGT AND DATA MINING (3)
    - IS680 - ENTERPRISE RESOURCE PLNG SYS (3)
  - Students whose previous studies include the undergraduate equivalent of IS 522 and/or IS 571 must substitute a 3-credit-hour graduate-level course.

Grand Total Credits: **15**

## **Entrepreneurship (Minor)**

### **Program Description**

The minor in Entrepreneurship minor helps students from any discipline develop the skills and mindset to launch their own business. Courses cover topics such as opportunity identification, business planning, marketing, and finance. The program is practicum-based and allows students to apply their own ideas and experiences to create a viable business plan. The program also benefits from the resources and activities of the Invention to Innovation Center (I<sup>2</sup>C), which fosters collaboration and innovation among tech startups in the region. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/minors>.

### **Number of Credit Hours**

18

## **Minor Requirements**

- Complete all of the following
  - Earned at least 1 of the following:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - ACC201 - ACC & FIN FOR ENTREPRENEURS (3)
  - Complete
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MGT405 - NEW VENTURE STRATEGIES (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MKT465 - MARKETING FOR NEW VENTURES (3)
- Project or Practicum
  - Complete 1 of the following
    - Earned at least 1 of the following:
      - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
      - MGT494 - PRACTICUM IN MANAGEMENT (3)
      - MU407 - INTERNSHIP MUSIC BUSINESS (3)
      - TH475 - PORTFOLIO (3)
    - Additional Project/Practicum Courses
  - Complete all of the following
    - any of the following courses with statement from faculty of record stating how the project or practicum applies to entrepreneurship, business, or the development of a new product
    - 3 hours from:
      - ARS432 - GRAPH DES: SENIOR PROJ MGMT (3)
      - AES414 - GEOSPATIAL APPLICATIONS (3)
      - AES495 - DIRECTED STUDY (2 - 4)
      - AES498 - RESEARCH & PROF DEV CAPSTONE (1)
      - BYS302 - PEOPLE, PLANTS & ENVIRONMENT (3)
      - BYS311 - INTRO MOLECULAR UNDSST BIO SYST (3)
      - BYS490 - SENIOR CAPSTONE (2)
      - BYS491 - SPECIAL TOPICS BIOLOGICAL SCI (1 - 4)
      - BYS492 - UNDERGRADUATE RESEARCH (2 - 4)
      - CE498 - CIVIL ENGINEERING DESIGN I (1)
      - CH421 - INSTRUMENTAL ANALYSIS (3)
      - CH480 - SELECTED TOPICS IN CHEM (1 - 3)
      - CH491 - INTRO TO CHEMICAL RESEARCH (1)
      - CHE448 - CHEMICAL ENGINEERING DESIGN (3)
      - CHE494 - APPLIED MATERIALS ENGINEERING (3)
      - CPE495 - COMPUTER ENGINEERING DESIGN I (3)
      - CS488 - INTRO TO BIG DATA COMPUTING (3)
      - CS499 - SR PROJ:TEAM SOFTWARE DESIGN (3)
      - EE494 - EE DESIGN PROJECTS (3)
      - ISE428 - SYSTEMS ANALYSIS & DESIGN I (3)
      - MA490 - SEL TOP UNDERGRAD MATH (1 - 3)
      - PH489 - SELECTED TOPICS (1 - 3)
      - PH499 - PHYSICS PRACTICUM (3)

Grand Total Credits: **18**

## **Federal Contract & Procurement Management (Graduate Certificate)**

### **Program Description**

The graduate certificate in Federal Contracting and Procurement Management is designed to provide professional development for individuals pursuing careers in contract management with either the Federal government or with government contractors. The program is designed for individuals possessing a bachelor degree in a field other than federal contracting, acquisition or procurement management. For students interested in completing both the MBA and the certificate, a subset of these courses may be used to satisfy course requirements for the Federal Contracting and Procurement concentration within the MBA program. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### **Number of Credit Hours**

15

### **Major Requirements**

Required Courses

12 Total Credits

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- Complete all of the following
  - Complete
    - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)
    - MGT502 - CONTRACT EVALUATION & AWARD (3)
    - MGT503 - CONTRACT PRICING & COST ANALYS (3)
    - BLS506 - GOVMT CONTRACT LAW (3)
  - Students whose previous studies include the undergraduate equivalent of MGT 501, MGT 502, MGT 503, and/or BLS 506 must substitute a 3-credit-hour graduate course for each applicable course.

Elective Courses

3 Total Credits

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- Complete all of the following
  - Earned at least 1 of the following:
    - ACC540 - BASIC GOVERNMENT CONTRACT ACCT (3)
    - IS522 - SUPPLY CHAIN MANAGEMENT SYS (3)
    - MSC510 - LOGISTICS MANAGEMENT (3)
  - Students whose previous studies include the undergraduate equivalent of ACC 540, IS 522, and/or MSC 510 must choose a different elective option from the provided list.

Grand Total Credits: **15**

## **Finance (BSBA)**

### **Program Description**

The BSBA in Finance provides students with a solid foundation in financial theory and practice. It covers topics such as financial markets, investments, corporate finance, and risk management. It equips students with the analytical skills and tools to make sound financial decisions and solve real-world problems. It also offers courses in topics such as banking, financial analysis, and federal contract accounting, to suit different career interests and goals. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/finance>.

### **Number of Credit Hours**

120

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)

- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)

- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following
      - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics



- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

- Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better.

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following

- 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

*keyboard\_arrow\_up*

Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

- Business students must choose both ECN 142 and ECN 143 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

29 - 31 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **29 - 31**

## **Major Requirements**

Business Core

24 Total Credits

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- Complete all of the following
  - 21 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

Major Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - FIN375 - FINANCIAL INSTITUTIONS (3)
    - FIN412 - FINANCIAL MODELING (3)
    - FIN431 - ADVANCED CORPORATE FINANCE (3)
    - FIN454 - INTERNATIONAL FINANCE (3)
    - FIN460 - INVESTMENTS (3)
  - 6 hours from:
    - FIN490 - SPECIAL PROJECTS (3)
    - FIN461 - PORTFOLIO MANAGEMENT (3)
    - FIN230 - FINANCE ACADEMY I (1)
    - FIN330 - FINANCE ACADEMY II (1)
    - FIN430 - FINANCE ACADEMY III (1)
    - ACC313 - INDIVIDUAL/SMALL BUS INCOME TA (3)
    - ACC414 - COST ACCOUNTING (3)
    - ECN340 - MACRO ECONOMIC ANALYSIS (3)
    - ECN345 - MICRO ECONOMIC ANALYSIS (3)
    - ECN352 - MONEY AND BANKING (3)
    - ECN475 - LABOR ECONOMICS (3)
    - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)
    - MGT403 - CONTRACT PRICING & COST ANALYS (3)
    - BLS406 - GOVERNMENT CONTRACT LAW (3)
    - FIN370 - COMMERCIAL BANK MANAGEMENT (3)
    - FIN400 - INVESTMENT PRACTICUM (3)

Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **50**

#### **4-Year Plan**

Year 1

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•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Finance (BSBA) - JUMP: BSBA Finance, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Analytics to one of four master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MGT@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MS\_SCLM@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MS SCLM

## **Finance (Minor)**

### **Program Description**

The minor in Finance teaches the modern analytic principles of finance applicable to a career in banking, insurance, and more. Students in the program take courses in financial markets, financial institutions, financial management, and investments, including three elective hands-on courses in the Finance Academy where students manage real investment portfolios. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/minors>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Earned at least 1 of the following:
    - ACC201 - ACC & FIN FOR ENTREPRENEURS (3)
    - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
  - Complete
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - FIN375 - FINANCIAL INSTITUTIONS (3)
    - FIN460 - INVESTMENTS (3)
  - Earned at least 1 of the following:
    - MSC287 - BUSINESS STATISTICS I (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - 3 hours from any FIN 300 - 400 level course(s)

Grand Total Credits: **21 - 22**

## **General Business (BSBA) (Fully Online)**

### **Program Description**

The BSBA in General Business provides students with a broad and flexible education in the various aspects of business. It covers topics such as accounting, economics, finance, management, marketing, and information systems. The program allows students to customize their degree by choosing electives from different business disciplines or other colleges, and prepares students for a variety of career opportunities in the public and private sectors. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/general-business-online>.

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

120

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

#### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

#### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Non-Literature

      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)

- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)



- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following
      - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)

- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)
- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
  - AST106 - EXPLORING THE COSMOS I (4)
  - AST107 - EXPLORING THE COSMOS II (4)
  - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
  - CH101 - INTRO TO CHEMISTRY (3)
  - CH105 - INTRO CHEMISTRY LAB (1)
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH121M - GENERAL CHEMISTRY I M (3)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
  - PH100 - CONCEPTUAL PHYSICS (4)
  - PH101 - GENERAL PHYSICS I (4)
  - PH102 - GENERAL PHYSICS II (4)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES104 - WEATHER & CLIMATE CHANGE (4)
- Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better.

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following

- 3 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

- Business students must choose both ECN 142 and ECN 143 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

**Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

26 - 28 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA536 - INTRO P-ADIC ANALYSIS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **26 - 28**

## **Major Requirements**

Business Core

21 Total Credits

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- 21 hours from:
  - FIN301 - PRINCIPLES OF FINANCE (3)
  - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - MSC385 - OPERATIONS ANALYSIS (3)
  - MGT450 - INTERNATIONAL BUSINESS (3)
  - MGT499 - COMPETITIVE STRATEGY (3)

Major Requirements

24 Total Credits

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- Complete all of the following
  - 21 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)  
Upper Division Elective
  - Complete 1 of the following
    - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)
    - 3 hours from:
      - EH301 - TECHNICAL WRITING (3)
      - MU407 - INTERNSHIP MUSIC BUSINESS (3)

General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **50**

## **4-Year Plan**

Year 1

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - Course Not Found
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA107S - ALGEBRA W/APPLICATIONS S-SECT (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
  - 3 Hours Fine Art
  - 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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No Rules

Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature

Year 3

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No Rules

Fall

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- Complete all of the following
  - 6 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - 6 Hours Business Electives (300+ or 400+ Courses)
  - 3 Hours Humanities or Fine Art

Spring

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- Complete all of the following
  - 9 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 6 Hours Business Electives (300+ or 400+ Courses)

Year 4

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Fall

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- Complete all of the following
  - 9 Hours Business Electives (300+ or 400+ Courses)
  - 3 Hours Non-Literature Humanity
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ course)
  - 3 Hours Business Elective (300+ or 400+ course)

## **General Business (BSBA) (Fully Online) - JUMP: BSBA General Business, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in General Business to one of six master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MGT@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MS\_SCLM@uah.edu or

MS\_CBSB@uah.edu or

MSIS\_IS@uah.edu or

MSM\_HRM@uah.edu

### **JUMP Landing Options**

JUMP Landing Options

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- Complete 1 of the following
  - Admitted to: MS MSBA
  - Admitted to: MBA MGT
  - Admitted to: MS CBSB
  - Admitted to: MS SCLM
  - Admitted to: MSIS IS
  - Admitted to: MSM HRM

## **Human Resource Management (Graduate Certificate) (Fully Online)**

### **Program Description**

The graduate certificate in Human Resource Management prepares graduates to employ contemporary Human Resource Management systems and practices in commercial and governmental environments, and provides students with an understanding of their importance in organizations and their power to enhance organizational performance through Human Resource Management. All credits hours earned in this certificate program can also be applied towards the MSM – Human Resource Management. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

15

### **Major Requirements**

Requirements

15 Total Credits

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- Complete all of the following
  - Complete
    - MGT560 - EMPLOYEE STAFFING & DEVELOP (3)
    - MGT561 - STRATEGIC COMPENSATION MGMT (3)
    - MGT562 - EMPLOYMENT LAW FOR MANAGERS (3)
    - MGT629 - LEADERSHIP: THRY & PRACTICE (3)
    - MGT631 - HRM & ORGANIZATIONAL BEHAVIOR (3)
  - HRM certificate students whose previous studies include the undergraduate equivalents of MGT 560 , MGT 561, and/or MGT 562 must substitute a 3-credit-hour graduate-level course for each applicable course.

Grand Total Credits: **15**



## **Human Resource Management (Minor)**

### **Program Description**

The minor in Human Resource Management (HRM) prepares students for careers involving recruiting and selecting employees, designing and managing pay and benefits, and employee performance management. Courses cover topics such as human resource management, compensation and benefits, employment law, and labor relations. The program is helpful for students who plan to work in small businesses or in fields that require managing teams of employees. This minor is not available to students pursuing a Management Major with a Human Resource Management Concentration within the BSBA degree. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/minors>.

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Complete
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - MGT462 - EMPLOYMENT LAW FOR MANAGERS (3)
  - 6 hours from:
    - CM451 - ORGANIZATIONAL TRNG & DEVELOP (3)
    - ECN475 - LABOR ECONOMICS (3)
    - MGT320 - CAREER DEVELOPMENT (3)
    - MGT410 - LEADERSHIP, PERSONAL DEV & ORG (3)
    - MGT460 - EMPLOYEE STAFFING & DEVELOP (3)
    - MGT461 - STRATEGIC COMPENSATION MGMT (3)
    - MGT494 - PRACTICUM IN MANAGEMENT (3)
    - MGT495 - INTERNSHIP IN MANAGEMENT (1 - 3)
  - Students taking ECN 475 will also have to take its prerequisite, ECN 143. We encourage HRM minors to take this class in Charger Foundations as part of their social science requirement.
  - For students in the HRM Minor, we will allow the following requisites to substitute for the prerequisites specified in the catalog description of the MGT 460 class: Prerequisites - MGT 301 with a minimum grade of B- or higher. Prerequisite with concurrency - MGT 363.

Grand Total Credits: **18**

## **Human Resource Management (MSM) (Fully Online)**

### **Program Description**

The MSM in Human Resource Management program is a fully online program that provides students with the knowledge and skills they need to become effective and strategic HR business partners. Designed for recent graduates and working professionals, our flexible, online program is focused on the value and development of human capital and is aligned with the standards set by the Society for Human Resource Management. Upon completion of the program, students are well-positioned for careers in human resources, consulting, and other related fields. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/hrm>.

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### **Graduate School Masters Requirements**

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Major Requirements**

- Complete all of the following
  - Complete
    - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)
    - MGT560 - EMPLOYEE STAFFING & DEVELOP (3)
    - MGT561 - STRATEGIC COMPENSATION MGMT (3)
    - MGT562 - EMPLOYMENT LAW FOR MANAGERS (3)
    - MGT622 - MANAGING HUMAN CAPITAL (3)
    - MGT629 - LEADERSHIP: THRY & PRACTICE (3)
    - MGT631 - HRM & ORGANIZATIONAL BEHAVIOR (3)
    - MSC600 - QUANTITATIVE METHODS (3)
    - MSC605 - OPERATIONS MANAGEMENT (3)
    - MGT695 - STRATEGIC HUMAN RESOURCE MGT (3)
  - Students whose previous studies include the undergraduate equivalents of ACC 600 and/or MSC 600 can substitute a 3-credit-hour graduate-level course for each applicable course.
  - Students whose previous studies include the undergraduate equivalents of MGT 560, MGT 561, and/or MGT 562 must substitute a 3-credit-hour graduate-level course for each applicable course.

Grand Total Credits: **30**

## **Information Systems (BSBA)**

### **Program Description**

The BSBA in Information Systems prepares students to become administrators or designers of information systems that utilize computers in business or administrative environments. Students can obtain the BSBA IS through one of the two concentrations available (described below). For further information, please refer to the department website at <https://www.uah.edu/business/undergraduate/information-systems>.

## **Number of Credit Hours**

120

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)

- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III

- Complete all of the following

- 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

- Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better.

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following

- Charger Foundations - Area IV

- Complete all of the following

- 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

■ 9 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

- Business students must choose both ECN 142 and ECN 143 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

29 - 31 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **29 - 31**

## **Major Requirements**

Business Core

24 Total Credits

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- Complete all of the following
  - 21 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

Grand Total Credits: **24**

## **Information Systems (BSBA) - Cybersecurity (Concentration)**



## **Description**

The BSBA in Information Systems with a Cybersecurity concentration prepares students to become information systems professionals who can protect and defend information systems from cyber threats, and focuses on the management and design of effective cybersecurity policies. The program also provides students with access to a state-of-the-art cybersecurity lab and opportunities to work with leading companies and agencies in Huntsville, and is certified by the National Security Agency (NSA) and the Department of Homeland Security (DHS). For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/information-systems>.

## **Concentration Requirements**

Concentration Requirements

24 Total Credits

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- Complete all of the following
  - 3 hours from:
    - IS210 - INTRO COMP PROG IN BUS (3)
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 21 hours from:
    - IS310 - ADVANCED PROGRAMMING (3)
    - IS340 - DATABASE MANAGEMENT (3)
    - IS401 - CYBERSECURITY PRINCIPLES (3)
    - IS450 - CYBERSECURITY MANAGEMENT (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS463 - DIGITAL FORENSICS (3)
    - IS477 - NETWORK DEFENSE & SECURITY (3)

General Electives

2 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 2
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)

- 3 Hours Fine Art
- 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - IS210 - INTRO COMP PROG IN BUS (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - IS310 - ADVANCED PROGRAMMING (3)
    - IS340 - DATABASE MANAGEMENT (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 Hours Humanities or Fine Art

Spring

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- 15 hours from:
  - CM313 - BUSINESS & PROFESSIONAL COMM (3)
  - IS401 - CYBERSECURITY PRINCIPLES (3)
  - FIN301 - PRINCIPLES OF FINANCE (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)
  - MSC385 - OPERATIONS ANALYSIS (3)

Year 4

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Fall

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- Complete all of the following
  - 9 hours from:
    - IS450 - CYBERSECURITY MANAGEMENT (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS463 - DIGITAL FORENSICS (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities

Spring

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- Complete all of the following
  - 9 hours from:
    - IS477 - NETWORK DEFENSE & SECURITY (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)

## **Information Systems (BSBA) - Information Systems, General (Concentration)**

### **Description**

The BSBA in Information Systems with a General concentration prepares students to become administrators or designers of information systems that utilize computers in business or administrative environments. IS subject matter includes computer hardware, software, database design, data communication, electronic commerce, systems analysis and design methodologies, information assurance, and behavioral issues and business or administrative context within which computer systems are applied. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/information-systems>.

## **Concentration Requirements**

Concentration Requirements

24 Total Credits

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- Complete all of the following
  - 3 hours from:
    - IS210 - INTRO COMP PROG IN BUS (3)
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS103 - INTRO PROGRAMMING USING JAVA (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - 18 hours from:
    - IS310 - ADVANCED PROGRAMMING (3)
    - IS340 - DATABASE MANAGEMENT (3)
    - IS351 - ENT & SUPPLY CHAIN MGT SYSTS (3)
    - IS412 - SYSTEMS ANALYSIS & DESIGN (3)
    - IS471 - BUSINESS ANALYTICS & AI (3)
    - IS491 - IS MANAGEMENT & STRATEGY (3)
  - 3 hours from:
    - IS401 - CYBERSECURITY PRINCIPLES (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)

General Electives

2 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 2
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - IS210 - INTRO COMP PROG IN BUS (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - CM331 - COMMUNICATION THEORY (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - IS310 - ADVANCED PROGRAMMING (3)
    - IS340 - DATABASE MANAGEMENT (3)
    - IS351 - ENT & SUPPLY CHAIN MGT SYSTS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

Spring

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- Complete all of the following
  - 9 hours from:
    - IS412 - SYSTEMS ANALYSIS & DESIGN (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)

- MSC385 - OPERATIONS ANALYSIS (3)
- 3 hours from:
  - IS401 - CYBERSECURITY PRINCIPLES (3)
  - IS460 - NETWORKING & IT INFRASTRUCTURE (3)
- 3 Hours Humanities or Fine Art

Year 4

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Fall

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- Complete all of the following
  - 9 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS471 - BUSINESS ANALYTICS & AI (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities

Spring

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- Complete all of the following
  - 9 hours from:
    - IS491 - IS MANAGEMENT & STRATEGY (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)

## **Information Systems (BSBA) - JUMP: BSBA Information Systems, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Information Systems to one of six master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_IS@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MSIS\_IS@uah.edu or

MS\_SCLM@uah.edu or

MS\_CBSB@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MSIS IS
  - Admitted to: MS SCLM
  - Admitted to: MS CBSB

## **Information Systems (Minor)**

### **Program Description**

The minor in Information Systems is designed to provide students in any major with coverage of basic Information Systems topics. It provides students with the flexibility to design their minor to match their interests in other business areas with significant overlap with information technology. It also provides technical credentials for the high-tech environment of Huntsville. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/minors>.

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Complete
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - IS310 - ADVANCED PROGRAMMING (3)
    - IS340 - DATABASE MANAGEMENT (3)
    - IS412 - SYSTEMS ANALYSIS & DESIGN (3)
  - 6 hours from:
    - IS351 - ENT & SUPPLY CHAIN MGT SYSTS (3)
    - IS401 - CYBERSECURITY PRINCIPLES (3)
    - IS460 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS471 - BUSINESS ANALYTICS & AI (3)
    - ECN411 - ECONOMICS INFORMATION TECH (3)
    - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
    - MKT470 - SOCIAL MEDIA MARKETING (3)

Grand Total Credits: **18**

## **Information Systems (MSIS) (Fully Online)**

### **Program Description**

The MSIS in Information Systems is a fully online 30-credit hour program that prepares students for careers in the information systems field. The program offers a flexible online format that allows students to learn at their own pace. Students in the MSIS program develop the knowledge and skills needed to be successful in a managerial or executive IS role. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/ms-is>.

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

30



## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

- Complete all of the following
  - Complete
    - IS512 - SYSTEMS ANALYSIS & DESIGN (3)
    - IS550 - CYBERSECURITY MANAGEMENT (3)
    - IS560 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS571 - BUSINESS ANALYTICS & AI (3)
    - IS601 - MANAGEMENT OF INFORMATION TECH (3)
    - IS640 - DATA MGT AND DATA MINING (3)
    - IS680 - ENTERPRISE RESOURCE PLNG SYS (3)
    - IS691 - INFORMATION SYS STRATEGY & APP (3)
  - 6 hours from the following:  
500 or 600 Level Electives
  - MS-IS students whose previous studies include the undergraduate equivalents of IS 512 , IS 560, and/or IS 571 must substitute a 3-credit-hour graduate-level IS course for each applicable course.
  - Recommended Elective: IS 522

Grand Total Credits: **30**

## **Management and Leadership (Minor)**

### **Program Description**

The minor in Management and Leadership prepares students for careers that require management and leadership skills. The program includes required courses from the field of management, and potential elective courses from communications, psychology, sociology, nursing, and political science. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/minors>.

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Not admitted to BSBA MGT
  - Complete
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - MGT462 - EMPLOYMENT LAW FOR MANAGERS (3)
  - 6 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - ISE402 - INDUSTRIAL & ORGANIZA PSY (3)
    - MGT410 - LEADERSHIP, PERSONAL DEV & ORG (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT460 - EMPLOYEE STAFFING & DEVELOP (3)
    - MGT461 - STRATEGIC COMPENSATION MGMT (3)
    - MGT470 - SPEC TOPICS SEMINAR IN MGMT (3)
    - PSC304 - AMERICAN PRESIDENCY (3)
    - PY375 - SOCIAL PSYCHOLOGY (3)
    - PY402 - INDUSTRIAL & ORGANIZA PSY (3)
    - SOC375 - SOCIAL PSYCHOLOGY (3)

Grand Total Credits: **18**

## **Management (BSBA)**

### **Program Description**

The BSBA in Management provides students with a broad and flexible education in the various aspects of business. Students can obtain this BSBA through one of the four concentrations available (described below). For further information, please refer to the department website at <https://www.uah.edu/business/undergraduate/management>.

### **Number of Credit Hours**

120

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)

- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following
      - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:  
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 Area III: Mathematics and Sciences - Sciences
  - AST100 - SURVEY OF ASTRONOMY (4)
  - AST106 - EXPLORING THE COSMOS I (4)
  - AST107 - EXPLORING THE COSMOS II (4)
  - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
  - CH101 - INTRO TO CHEMISTRY (3)
  - CH105 - INTRO CHEMISTRY LAB (1)
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH121M - GENERAL CHEMISTRY I M (3)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
  - PH100 - CONCEPTUAL PHYSICS (4)
  - PH101 - GENERAL PHYSICS I (4)
  - PH102 - GENERAL PHYSICS II (4)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES104 - WEATHER & CLIMATE CHANGE (4)
- Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better.

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:  
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 Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)
      - 3 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
 Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)

- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)
- Business students must choose both ECN 142 and ECN 143 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

29 - 31 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **29 - 31**

## **Major Requirements**

Business Core

24 Total Credits

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- Complete all of the following
  - 21 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

Grand Total Credits: **24**

## **Management (BSBA) - Acquisition Management (Concentration)**

### **Description**

The BSBA in Management with an Acquisition Management concentration is a program that prepares students to become contract managers who can plan, execute, and monitor contracts in various industries. The program also provides students with knowledge of legal, financial, and ethical issues related to contract management. The program is suitable for students who want to pursue a career in government or private sector contracting. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/management>.

### **Concentration Requirements**

Major Requirements

21 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 18 hours from:
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - MGT401 - INTRO TO CONTRACT MANAGEMENT (3)
    - MGT402 - CONTRACT EVALUATION & AWARD (3)
    - MGT403 - CONTRACT PRICING & COST ANALYS (3)
    - BLS406 - GOVERNMENT CONTRACT LAW (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

General Electives

5 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

### **4-Year Plan**

Year 1

*keyboard\_arrow\_up*



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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
  - 3 Hours Literature
  - 3 Hours Non-Literature Humanities

Year 3

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - MGT401 - INTRO TO CONTRACT MANAGEMENT (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT460 - EMPLOYEE STAFFING & DEVELOP (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 3 Hours Humanities or Fine Art

Year 4

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - MGT403 - CONTRACT PRICING & COST ANALYS (3)
  - 6 Hours Business Electives (300+ or 400+ Courses)
  - 3 Hours General Elective

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - BLS410 - BUSINESS NEGOTIATIONS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)

## **Management (BSBA) - General Business (Concentration)**

### **Description**

The BSBA with a General Business concentration provides students with a broad and flexible education in the various aspects of business. It consists of 120 credit hours of courses that cover topics such as accounting, economics, finance, management, marketing, and information systems. The program allows students to customize their degree by choosing electives from different business disciplines or other colleges, and prepares students for a variety of career opportunities in the public and private sectors. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/general-business-online>.

## **Management (BSBA) - Human Resource Management (Concentration)**

### **Description**

The BSBA in Management with a Human Resource Management concentration prepares students for careers in the human resources field. The program also provides students with knowledge of employee staffing, development, compensation, and employment law, and is suitable for students who want to pursue a career in human resource management or related fields. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/management>.

## **Concentration Requirements**

### Major Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - MGT460 - EMPLOYEE STAFFING & DEVELOP (3)
    - MGT461 - STRATEGIC COMPENSATION MGMT (3)
    - MGT462 - EMPLOYMENT LAW FOR MANAGERS (3)
  - Experiential Course
  - Complete all of the following
    - 3 hours from:
      - MGT470 - SPEC TOPICS SEMINAR IN MGMT (3)
      - MGT490 - SPECIAL PROJECTS (1 - 3)
      - MGT494 - PRACTICUM IN MANAGEMENT (3)
      - MGT495 - INTERNSHIP IN MANAGEMENT (1 - 3)
      - MKT465 - MARKETING FOR NEW VENTURES (3)
      - MSC490 - SPECIAL PROJECTS (3)
      - MSC495 - INTERN IN MGMT SCIENCE (3)
    - or a college approved study abroad
  - Concentration Elective
  - Complete all of the following
    - 3 hours from:
      - CM451 - ORGANIZATIONAL TRNG & DEVELOP (3)
      - ECN475 - LABOR ECONOMICS (3)
      - MGT320 - CAREER DEVELOPMENT (3)
      - MGT405 - NEW VENTURE STRATEGIES (3)
      - MGT408 - TEAMWORK & TEAM PROCESSES (3)
      - MGT410 - LEADERSHIP, PERSONAL DEV & ORG (3)
      - MGT470 - SPEC TOPICS SEMINAR IN MGMT (3)
      - MGT490 - SPECIAL PROJECTS (1 - 3)
      - MGT494 - PRACTICUM IN MANAGEMENT (3)
    - or a college approved study abroad

### General Electives

5 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

### Year 1

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### Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)

- EH105 - HONORS ENGLISH SEMINAR (3)
- Earned at least 1 of the following:
  - FYE101B - CHARGER SUCCESS - BUSINESS (1)
  - HON101 - INTRO TO HONORS RESEARCH (1)
- 3 hours from:
  - MA107 - ALGEBRA WITH APPLICATIONS (3)
  - MA112 - PRECALCULUS ALGEBRA (3)
- 3 Hours Fine Art
- 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)

- FIN301 - PRINCIPLES OF FINANCE (3)
- MGT361 - ORGANIZATIONAL BEHAVIOR (3)
- MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
- 3 hours from:
  - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
  - EH301 - TECHNICAL WRITING (3)

Spring

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- Complete all of the following
  - 9 hours from:
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT460 - EMPLOYEE STAFFING & DEVELOP (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 3 Hours Non-Literature Humanities
  - 3 Hours Humanities or Fine Art

Year 4

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Fall

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- Complete all of the following
  - 9 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT461 - STRATEGIC COMPENSATION MGMT (3)
    - MGT462 - EMPLOYMENT LAW FOR MANAGERS (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours Experiential Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)
  - 3 Hours Concentration Elective
  - 3 Hours General Elective

## **Management (BSBA) - JUMP: BSBA Management, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Management to one of six master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MGT@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MSIS\_IS@uah.edu or

MS\_SCLM@uah.edu or

MS\_CBSB@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MSIS IS
  - Admitted to: MS SCLM
  - Admitted to: MS CBSB

## **Management (BSBA) - Management, General (Concentration)**

### **Description**

The BSBA in Management with a General concentration provides students with a broad and flexible education in the various aspects of business. The program also provides students with career development skills and opportunities to explore new venture strategies, and is suitable for students who want to pursue a variety of career opportunities in the public and private sectors. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/management>.

## **Concentration Requirements**

### Major Requirements

21 Total Credits

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- Complete all of the following
  - 12 hours from:
    - MGT320 - CAREER DEVELOPMENT (3)
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - MGT405 - NEW VENTURE STRATEGIES (3)
  - 6 hours from any MGT or MSC 300 - 400 level course(s)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

### General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

### Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science



Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
  - 3 Hours Humanities or Fine Art

Spring

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- Complete all of the following
  - 9 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - MGT320 - CAREER DEVELOPMENT (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 Hours Management Elective (MGT or MSC 300+ or 400+ Course)

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - MGT405 - NEW VENTURE STRATEGIES (3)
  - 3 Hours Management Elective (MGT or MSC 300+ or 400+ Course)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)
  - 3 Hours Business Elective (300+ or 400+ Course)

## **Management (BSBA) - Supply Chain Management (Concentration)**

### **Description**

The BSBA in Management with a Supply Chain Management concentration is a program that prepares students to become managers who can effectively plan, execute, and monitor the flow of goods and services from suppliers to customers. The program also provides students with knowledge of supply chain management systems, transportation and logistics, and data analytics. The program is suitable for students who want to pursue a career in supply chain management or related fields. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/management>.

### **Concentration Requirements**

Major Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
    - IS422 - SUPPLY CHAIN MANAGEMENT SYSTEM (3)
    - MSC410 - TRANSPORTATION & LOGISTICS (3)
    - MSC411 - SUPPLY CHAIN MANAGEMENT (3)
  - 6 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS422 - SUPPLY CHAIN MANAGEMENT SYSTEM (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MSC411 - SUPPLY CHAIN MANAGEMENT (3)
  - 3 Hours Humanities or Fine Art

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - MSC410 - TRANSPORTATION & LOGISTICS (3)
  - 6 Hours Business Electives (300+ or 400+ Courses)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities

Spring

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- Complete all of the following
  - 6 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours General Elective

**Management (MBA) (Fully Online)**

## **Program Description**

The MBA in Management program offers students a high-quality education in business administration and prepares them for various careers in the global economy. The program offers a flexible format that allows students to learn at their own pace, and has eight optional concentrations: Business Analytics, Cybersecurity, Engineering Management, Federal Contracting and Procurement Management, Information Systems, Marketing, Supply Chain Management, and Technology and Innovation Management. The program also provides opportunities for experiential learning and networking with industry partners in Huntsville. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

## **Delivery Method**

Fully Online

## **Number of Credit Hours**

36

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Major Requirements**

- Complete all of the following
  - Complete
    - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)
    - ACC602 - MANAGERIAL ACCOUNTING (3)
    - ECN600 - FOUNDATIONS OF ECONOMICS (3)
    - ECN626 - MANAGERIAL ECON & TECH (3)
    - FIN601 - FIN DECIS UNDER UNCERTAINTY (3)
    - MGT622 - MANAGING HUMAN CAPITAL (3)
    - MGT629 - LEADERSHIP: THRY & PRACTICE (3)
    - MKT601 - MARKETING STRATEGY & ANALYSIS (3)
    - MSC600 - QUANTITATIVE METHODS (3)
    - MSC605 - OPERATIONS MANAGEMENT (3)
    - MGT698 - STRATEGIC MANAGEMENT (3)
  - Earned at least 1 of the following:
    - MSC622 - ANALYTICS FOR MANAGERS (3)
    - MKT604 - NEW PRODUCT DEVELOPMENT (3)
    - MGT601 - TECH & INNOVATION MGMT (3)
    - IS601 - MANAGEMENT OF INFORMATION TECH (3)
  - MBA students whose previous studies include the undergraduate equivalents of ACC 600 , ECN 600, and/or MSC 600 can substitute a 3-credit-hour graduate-level course for each of the latter.

Grand Total Credits: **36**

## **Management (MBA) (Fully Online) - MBA Business Analytics (Concentration)**

### **Description**

The MBA in Management with a Business Analytics concentration prepares students to apply data-driven methods and tools to solve business problems. Students learn how to collect, analyze, and communicate data using various techniques such as programming, data mining, artificial intelligence, and simulation. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - MSC550 - INTRO ANALYTICS & PROGRAMMING (3)
  - Electives
  - Complete 1 of the following
    - 6 hours from:
      - IS571 - BUSINESS ANALYTICS & AI (3)
      - IS640 - DATA MGT AND DATA MINING (3)
      - MSC641 - ADVANCED ANALYTICS (3)
      - MSC610 - MODELING & SIMULATION (3)
    - hours from:
      - IS571 - BUSINESS ANALYTICS & AI (3)
      - IS640 - DATA MGT AND DATA MINING (3)
      - MSC641 - ADVANCED ANALYTICS (3)
      - MSC615 - DECISION MODELING (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Cybersecurity (Concentration)**

### **Description**

The MBA in Management with a Cybersecurity concentration prepares students to protect and manage information systems and networks from cyber threats. Students learn the principles, practices, and tools of cybersecurity management, network defense, and computer forensics. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - IS501 - CYBERSECURITY PRINCIPLES (3)
  - Earned at least 1 of the following:
    - IS550 - CYBERSECURITY MANAGEMENT (3)
    - IS560 - NETWORKING & IT INFRASTRUCTURE (3)
  - Earned at least 1 of the following:
    - IS577 - NETWORK DEFENSE & SECURITY (3)
    - IS663 - COMPUTER FORENSICS (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Engineering Management (Concentration)**

### **Description**

The MBA in Management with an Engineering Management concentration prepares students to apply management principles and theory to engineering organizations and projects. Students learn how to plan, organize, lead, and control engineering systems and processes. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - EM660 - ENGR MGMT THEORY (3)
    - EM760 - ENGR MGMT STRUCTURES & SYSTEMS (3)
  - Earned at least 1 of the following:
    - EM666 - ENGR PROJECT MANAGEMENT (3)
    - MGT640 - PRIN OF PROJECT MGMT (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Federal Contract & Procurement Management (Concentration)**

### **Description**

The MBA in Management with a Federal Contract and Procurement Management concentration prepares students to pursue careers in contract management with the federal government or government contractors. Students learn the fundamentals of contract management, evaluation, award, pricing, and law. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete
  - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)
  - MGT502 - CONTRACT EVALUATION & AWARD (3)
  - MGT503 - CONTRACT PRICING & COST ANALYS (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Information Systems (Concentration)**

### **Description**

The MBA in Management with an Information Systems concentration prepares students to manage information technology and systems in various business contexts. Students learn how to design, implement, and evaluate information systems and enterprise resource planning systems. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - IS601 - MANAGEMENT OF INFORMATION TECH (3)
    - IS680 - ENTERPRISE RESOURCE PLNG SYS (3)
  - Earned at least 1 of the following:
    - IS512 - SYSTEMS ANALYSIS & DESIGN (3)
    - IS640 - DATA MGT AND DATA MINING (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Management, General (Concentration)**

### **Description**

The MBA in Management with a General concentration offers students a high-quality education in business administration and prepares them for various careers in the global economy. The program also provides opportunities for experiential learning and networking with industry partners in Huntsville. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.



## **Management (MBA) (Fully Online) - MBA Marketing (Concentration)**

### **Description**

The MBA in Management with a Marketing concentration prepares students to develop and implement effective marketing strategies and tactics for various products and services. Students learn how to conduct market research, analyze consumer behavior, design new product development, and manage marketing communications. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - MKT570 - SOCIAL MEDIA MARKETING (3)
    - MKT604 - NEW PRODUCT DEVELOPMENT (3)
  - Earned at least 1 of the following:
    - MKT602 - MARKETING RESEARCH DESIGN (3)
    - MSC510 - LOGISTICS MANAGEMENT (3)
    - MSC615 - DECISION MODELING (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Supply Chain Management (Concentration)**

### **Description**

The MBA in Management with a Supply Chain Management concentration prepares students to manage the flow of goods and services from suppliers to customers. Students learn how to optimize the efficiency, quality, and sustainability of supply chains in various industries. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete
  - IS522 - SUPPLY CHAIN MANAGEMENT SYS (3)
  - MSC510 - LOGISTICS MANAGEMENT (3)
  - MSC611 - SUPPLY CHAIN MANAGEMENT (3)

Grand Total Credits: **9**

## **Management (MBA) (Fully Online) - MBA Technology & Innovation Management (Concentration)**

### **Description**

The MBA in Management with a Technology and Innovation Management concentration prepares students to manage the development and commercialization of new technologies and innovations. Students learn how to foster a culture of creativity, entrepreneurship, and collaboration in various organizations. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/mba>.

### **Concentration Requirements**

- Complete
  - MGT505 - NEW VENTURES STRATEGIES (3)
  - MGT601 - TECH & INNOVATION MGMT (3)
  - MGT640 - PRIN OF PROJECT MGMT (3)

Grand Total Credits: **9**

## **Marketing (BSBA)**

### **Program Description**

The BSBA in Marketing prepares students to pursue careers in corporate digital marketing, supply chain in marketing, and general marketing. Students can obtain this BSBA through one of the three concentrations available (described below). For further information, please refer to the department website at <https://www.uah.edu/business/undergraduate/marketing>.

### **Number of Credit Hours**

120

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)
    - keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - WLC 101
      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
      - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
      - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
      - WLC101MS - INTRO TO MEDICAL SPANISH (3)
      - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
      - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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Area II: Humanities and Fine Arts - WLC 102
      - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
      - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
      - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
      - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
      - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
      - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
      - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following

- 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)

- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)
- Business students must choose either MA 107, MA 107S, MA 112, or MA 112S in Area III: Mathematics in Charger Foundations to satisfy the prerequisite for MA 120 and score a grade of C- or better.

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
        - PY101 - GENERAL PSYCHOLOGY I (3)
        - PY201 - LIFE-SPAN DEVELOPMENT (3)
        - SOC100 - INTRO TO SOCIOLOGY (3)
        - SOC103 - INTRO TO CRIMINOLOGY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
    - Business students must choose both ECN 142 and ECN 143 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

29 - 31 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
    - BUS300 - BUSINESS TRANSITIONS (1)
  - Accounting
  - Complete 1 of the following
    - 4 hours from:
      - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - 6 hours from:
      - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
      - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
  - 18 hours from:
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS146 - COMPUTER APPL IN BUSINESS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from any ECN 300 - 400 level course(s)

Grand Total Credits: **29 - 31**

## **Major Requirements**

Business Core

24 Total Credits

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- Complete all of the following
  - 21 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
  - 3 hours from any ACC, BLS, ECN, FIN, IS, MGT, MKT, or MSC 300 - 400 level course(s)

Grand Total Credits: **24**

## **Marketing (BSBA) - Digital Marketing (Concentration)**

## **Description**

The BSBA in Marketing with a Digital Marketing concentration provides students with the knowledge and skills needed to pursue careers in corporate digital marketing, supply chain in marketing, and general marketing. The program focuses on marketing and analytical skills needed by industry and governments to develop effective, profitable social marketing strategies to interact with customers and partners. It covers web analytics, marketing research, web and mobile applications, and online promotion mix. The program prepares students for careers such as social media marketing manager, social media strategist, search engine optimization strategist, and online community manager. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/marketing>.

## **Concentration Requirements**

### Major Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - MKT332 - BUYER BEHAVIOR (3)
    - MKT343 - MARKETING RESEARCH (3)
    - MKT344 - MARKETING ANALYTICS (3)
    - MKT470 - SOCIAL MEDIA MARKETING (3)
    - MKT480 - MARKETING MANAGEMENT (3)
  - 3 hours from:
    - MKT315 - SALES MGT/PROF SELLING (3)
    - MKT316 - RETAILING POLICY/MGT (3)
    - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
    - MKT465 - MARKETING FOR NEW VENTURES (3)
    - MKT472 - DIGITAL MARKETING (3)
- Experiential Course
  - Complete 1 of the following
    - 3 hours from:
      - MKT465 - MARKETING FOR NEW VENTURES (3)
      - MKT490 - SPECIAL PROJECTS (1 - 3)
      - MKT494 - PRACTICUM IN MARKETING (3)
      - MKT495 - INTERN IN MARKETING (1 - 3)
    - or a college approved study abroad

### General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:



- EH101 - COLLEGE WRITING I (3)
- EH105 - HONORS ENGLISH SEMINAR (3)
- Earned at least 1 of the following:
  - FYE101B - CHARGER SUCCESS - BUSINESS (1)
  - HON101 - INTRO TO HONORS RESEARCH (1)
- 3 hours from:
  - MA107 - ALGEBRA WITH APPLICATIONS (3)
  - MA112 - PRECALCULUS ALGEBRA (3)
- 3 hours Fine Art
- 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:

- CM313 - BUSINESS & PROFESSIONAL COMM (3)
- FIN301 - PRINCIPLES OF FINANCE (3)
- MKT332 - BUYER BEHAVIOR (3)
- MKT343 - MARKETING RESEARCH (3)
- 3 Hours Humanities or Fine Art

Spring

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- Complete all of the following
  - 9 hours from:
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MKT470 - SOCIAL MEDIA MARKETING (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 Hours Marketing Elective (MKT 300+ or 400+ Course)

Year 4

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Fall

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- Complete all of the following
  - 6 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MKT344 - MARKETING ANALYTICS (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours Experiential Elective
  - 3 Hours Non-Literature Humanities

Spring

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- Complete all of the following
  - 6 hours from:
    - MGT499 - COMPETITIVE STRATEGY (3)
    - MKT480 - MARKETING MANAGEMENT (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)
  - 3 Hours General Elective

## **Marketing (BSBA) - JUMP: BSBA Marketing, Multiple**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSBA in Marketing to one of five master's programs in Business is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition.

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_IS@uah.edu

### **JUMP Landing (Graduate Program)**

MBA\_MGT@uah.edu or

MS\_BA@uah.edu or

MSM\_HRM@uah.edu or

MSIS\_IS@uah.edu or

MS\_SCLM@uah.edu

### **JUMP Landing Options**

- Complete 1 of the following
  - Admitted to: MBA MGT
  - Admitted to: MS MSBA
  - Admitted to: MSM HRM
  - Admitted to: MSIS IS
  - Admitted to: MS SCLM

## **Marketing (BSBA) - Marketing, General (Concentration)**

### **Description**

The BSBA in Marketing with a General concentration provides students with the knowledge and skills needed to pursue careers in corporate digital marketing, supply chain in marketing, and general marketing and is designed for students who are interested in business-to-consumer marketing. This concentration helps students develop research skills to identify market opportunities and prepares students with the managerial acumen to be successful in consumer product marketing or in retail management. This concentration gives students the flexibility to customize their major field coursework to fit their particular career ambitions. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/marketing>.

## **Concentration Requirements**

### Major Requirements

21 Total Credits

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- Complete all of the following
  - 12 hours from:
    - MKT332 - BUYER BEHAVIOR (3)
    - MKT343 - MARKETING RESEARCH (3)
    - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
    - MKT480 - MARKETING MANAGEMENT (3)
  - Marketing Electives
  - Complete all of the following
    - 9 hours from any MKT 300 - 400 level course(s)
    - a college approved study abroad can count towards marketing electives requirement

### General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

### Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

- 4 Hours Lab Science
- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MKT332 - BUYER BEHAVIOR (3)
    - MKT343 - MARKETING RESEARCH (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

Spring

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- Complete all of the following
  - 6 hours from:
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
  - 6 Hours Marketing Electives (MKT 300+ or 400+ Courses)
  - 3 Hours Humanities or Fine Art

Year 4

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Fall

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- Complete all of the following
  - 6 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
  - 3 Hours Marketing Elective (MKT 300+ or 400+ Course)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities

Spring

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- Complete all of the following
  - 5 hours from:
    - MGT499 - COMPETITIVE STRATEGY (3)
    - MKT480 - MARKETING MANAGEMENT (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)
  - 3 Hours General Elective

## **Marketing (BSBA) - Supply Chain in Marketing (Concentration)**

### **Description**

The BSBA in Marketing with a concentration in Supply Chain in Marketing involves all areas of the supply chain, from planning to distribution. It prepares marketing students who are interested in business-to-business marketing to manage inter-organizational relationships that are necessary to integrate the transportation, logistics, purchasing, information technology, and operations across the network of firms. This concentration is designed to prepare students for careers in supply chain management with industrial firms and public sector organizations such as the Department of Defense and NASA. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/marketing>.

### **Concentration Requirements**

Major Requirements

21 Total Credits

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- 21 hours from:
  - IS422 - SUPPLY CHAIN MANAGEMENT SYSTEM (3)
  - MKT332 - BUYER BEHAVIOR (3)
  - MKT343 - MARKETING RESEARCH (3)
  - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
  - MKT480 - MARKETING MANAGEMENT (3)
  - MSC410 - TRANSPORTATION & LOGISTICS (3)
  - MSC411 - SUPPLY CHAIN MANAGEMENT (3)

General Electives

5 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 5
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **26**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 3 hours from:
    - IS146 - COMPUTER APPL IN BUSINESS (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - Earned at least 1 of the following:
    - FYE101B - CHARGER SUCCESS - BUSINESS (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - 3 Hours Fine Art
  - 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - BLS211 - LEGAL ENVIRON/BUSINESS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 9 hours from:
    - ACC212 - PRIN MANAGERIAL ACCOUNTING (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MSC288 - BUSINESS STATISTICS II (3)
  - 3 Hours Literature
  - 3 Hours Non-Literature Humanities

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - MKT332 - BUYER BEHAVIOR (3)
    - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
  - 3 hours from:
    - EH300 - STRATEGIES FOR BUSINESS WRIT'G (3)
    - EH301 - TECHNICAL WRITING (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - IS301 - INFO SYSTEMS IN ORGANIZATIONS (3)
    - MSC385 - OPERATIONS ANALYSIS (3)
    - MSC411 - SUPPLY CHAIN MANAGEMENT (3)
  - 3 Hours Humanities or Fine Art

Year 4

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Fall

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- Complete all of the following
  - 9 hours from:
    - MGT450 - INTERNATIONAL BUSINESS (3)
    - MKT343 - MARKETING RESEARCH (3)
    - MSC410 - TRANSPORTATION & LOGISTICS (3)
  - 3 Hours Business Elective (300+ or 400+ Course)
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 9 hours from:
    - IS422 - SUPPLY CHAIN MANAGEMENT SYSTEM (3)
    - MGT499 - COMPETITIVE STRATEGY (3)
    - MKT480 - MARKETING MANAGEMENT (3)
  - 3 Hours Economics Elective (ECN 300+ or 400+ Course)



## **Marketing (Minor)**

### **Program Description**

The minor in Marketing is beneficial for students looking to prepare themselves for careers in advertising, public relations, marketing management, international marketing, marketing on the internet, and supply chain management. It can complement a major in disciplines such as communications, sociology, or psychology, and can also be useful for students in science and engineering. A minor in marketing is also a good option for non-business majors who plan to start their own business or work in the family business. For further information, please refer to the department web site at <https://www.uah.edu/business/undergraduate/marketing>.

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Complete
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - MKT332 - BUYER BEHAVIOR (3)
    - MKT343 - MARKETING RESEARCH (3)
    - MKT480 - MARKETING MANAGEMENT (3)
  - 6 hours from:
    - MKT316 - RETAILING POLICY/MGT (3)
    - MKT350 - MARKETING EMERGING TECHNOLOGY (3)
    - MKT470 - SOCIAL MEDIA MARKETING (3)
    - MSC410 - TRANSPORTATION & LOGISTICS (3)
  - MKT 301 is a prerequisite for most other classes in the minor. It should be taken as early as possible in the student's program.
  - For students in the Marketing minor, we will accept either PY 300, SOC 303 or CM 370 as substitutes for the MSC 287 and MSC 288 prerequisites for MKT 343.

Grand Total Credits: **18**

## Supply Chain Management (Graduate Certificate) (Fully Online)

### Program Description

The graduate certificate in Supply Chain Management is designed to provide professional development for individuals pursuing careers in logistics and supply chain management with the federal government, government contractors, manufacturers, or service organizations. The program is designed for individuals possessing a bachelor's degree in a field other than supply chain management. For students who are also interested in completing either the MS-Supply Chain Management or the MBA, a subset of the certificate courses may be used to satisfy some of the requirements within those programs. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### Delivery Method

Fully Online

### Number of Credit Hours

15

### Major Requirements

Required Courses

15 Total Credits

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- Complete all of the following
  - Complete
    - IS522 - SUPPLY CHAIN MANAGEMENT SYS (3)
    - MSC510 - LOGISTICS MANAGEMENT (3)
    - MSC600 - QUANTITATIVE METHODS (3)
    - MSC605 - OPERATIONS MANAGEMENT (3)
    - MSC611 - SUPPLY CHAIN MANAGEMENT (3)
  - Students whose previous studies include the undergraduate equivalent of MSC 600 can substitute a 3-credit-hour graduate-level course.

Electives

3 Total Credits

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- Complete all of the following
  - Earned at least 1 of the following:
    - MSC550 - INTRO ANALYTICS & PROGRAMMING (3)
    - MSC615 - DECISION MODELING (3)
    - MSC622 - ANALYTICS FOR MANAGERS (3)
  - Or other graduate course approved by the MSC faculty.

Grand Total Credits: **18**

## Supply Chain Management (MS) (Fully Online)

### Program Description

The MS in Supply Chain Management is a fully online program that offers students a comprehensive education in supply chain management and logistics. The program covers topics such as supply chain management systems, contract management, operations management, analytics, and strategy. The program also includes a capstone course that involves a practicum project with a local organization. The program is designed for working professionals who want to advance their careers in the field of supply chain management. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/degrees/supply-chain>.

## **Delivery Method**

Fully Online

## **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

- Complete all of the following
  - Complete
    - ACC600 - FOUNDATIONS ACC MANAGERS & ENG (3)
    - IS522 - SUPPLY CHAIN MANAGEMENT SYS (3)
    - MGT501 - INTRO TO CONTRACT MANAGEMENT (3)
    - MSC510 - LOGISTICS MANAGEMENT (3)
    - MSC600 - QUANTITATIVE METHODS (3)
    - MSC605 - OPERATIONS MANAGEMENT (3)
    - MSC611 - SUPPLY CHAIN MANAGEMENT (3)
    - MSC615 - DECISION MODELING (3)
    - MSC693 - SUPPLY CHAIN STRATEGY (3)
  - 3 hours from the following:  
500 or 600 level elective
  - Students whose previous studies include the undergraduate equivalents of ACC 600 and/or MSC 600 can substitute a 3-credit-hour graduate-level course for each applicable course.
  - Recommended Elective: MGT 503

Grand Total Credits: **30**

## Technology, Innovation Management, and Entrepreneurship (Graduate Certificate)

### Program Description

The graduate certificate in Technology, Innovation Management, and Entrepreneurship introduces participants to the role technology and innovation play in transforming industries, organizations, and work. It provides insight into the processes of product development, human resource management, marketing, and technical project management within high tech environments. For students who are also interested in completing the MBA, a subset of the certificate courses may be used to satisfy some of the requirements in the MBA and the Technology & Innovation Management concentration. For further information, please refer to the department web site at <https://www.uah.edu/business/grad/graduate-certificates>.

### Number of Credit Hours

15

### Major Requirements

Requirements

15 Total Credits

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- Complete
  - MGT505 - NEW VENTURES STRATEGIES (3)
  - MGT601 - TECH & INNOVATION MGMT (3)
  - MGT629 - LEADERSHIP: THRY & PRACTICE (3)
  - MGT631 - HRM & ORGANIZATIONAL BEHAVIOR (3)
  - MGT640 - PRIN OF PROJECT MGMT (3)

Grand Total Credits: **15**

## College of Education

### Applied Behavior Analysis (MS) (Fully Online)

#### Program Description

The MS in Applied Behavior Analysis consists of coursework approved as a Verified Course Sequence through the Association for Behavior Analysis International (ABAI). This program produces scientist-practitioners who meet the coursework requirements needed to become a Board Certified Behavior Analyst (BCBA) and provide our students with the knowledge that will prepare them to serve individual clients, the community, and the field of behavior analysis as a whole through research and practice. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-science-in-aba-m-s-a-b-a>

#### Delivery Method

Fully Online

#### Number of Credit Hours

33

## **Degree Requirements**

- Graduate School Degree Requirements

- Complete all of the following
  - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
  - No grade of D or F may be counted toward a graduate degree.
  - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
  - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Major Requirements**

Major Requirements

21 Total Credits

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- Complete
  - EDC610 - BEHAVIORAL ASSESSMENT (3)
  - EDC611 - ETHICS IN ABA (3)
  - EDC612 - FUNDAMENTALS IN ABA I (3)
  - EDC613 - FUNDAMENTALS OF ABA II (3)
  - EDC614 - RESEARCH METHODS IN ABA (3)
  - EDC615 - INTERVENTIONS IN ABA (3)
  - EDC616 - SUPERVISION & MGMT IN ABA (3)

Free Electives

12 Total Credits

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- Complete all of the following
  - 12 hours from:
    - ED570 - DIFF INSTRUCTION SPEC POP (3)
    - EDC511 - INSTRUCTIONAL STRATEGIES (3)
    - EDC551 - FND OF VISUAL IMPAIRMENTS (3)
    - EDC617 - SUPERVISED FIELDWORK ABA (1 - 3)
    - EDC625 - ASSISTIVE TECH EDUC INDV W/ASD (3)
    - EDC636 - INTRO STUD AUTISM SPECTR DISOR (3)
    - EDC645 - ASMT & BEHAVIOR APPLC ASD (3)
    - EDC652 - INTRO TO O&M (3)
    - EDC653 - STRATEGIES FOR VI (3)
    - EDC654 - INTRO TO BRAILLE (3)
    - EDC655 - COLLAB & TRANSITION PLANNG (3)
    - EDC656 - PROGRAMS FOR MIVI/DB (3)
    - ESL640 - INSTRUCT/EVAL LANG USAGE (3)
    - PY520 - SPECIAL TOPICS (3)
    - PY530 - PSYCHOMETRICS (3)
    - PY537 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
    - PY615 - GRADUATE SEMINAR (3)
  - Other Related Courses with Departmental Approval

Grand Total Credits: **33**

## **Autism Spectrum Disorder (Graduate Certificate) (Fully Online)**

### **Program Description**

The graduate certificate in Autism Spectrum Disorder (ASD) is ideal for educators, interventionists, psychologists, pathologists, behavior analysts, and family members who want to enhance their preparation for working with children and adults who have ASD. UAH's online/hybrid ASD Graduate Certificate is **a non-licensure program** designed for teachers and human service agency staff to acquire these skills and expertise. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/graduate-certificate-in-autism>

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

15

### **Major Requirements**

- Complete
  - EDC636 - INTRO STUD AUTISM SPECTR DISOR (3)
  - EDC645 - ASMT & BEHAVIOR APPLC ASD (3)
  - EDC655 - COLLAB & TRANSITION PLANNG (3)
  - EDC625 - ASSISTIVE TECH EDUC INDV W/ASD (3)
  - EDC660 - PRCTL APPLC VIS INSTR STRATEGY (3)

Grand Total Credits: **15**

## **Child, Family, Community Development (BS)**

### **Program Description**

The BS in Child, Family & Community Development (CFCD) degree provides opportunities for students who wish to work with young children and their families in a community setting outside of a formal public or private school setting (meaning without a state-issued teaching certification). This program will develop leaders in the field who focus on improving the lives of young children and families whether that be through high-quality early care and education programs, non-profits, children's museums, recreation centers or similar specialized programming, etc. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Number of Credit Hours**

120

### **Degree Requirements**

Degree Requirements

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- Degree Requirements (Education: Teaching)
  - Complete all of the following
    - Must have a 2.75 GPA in Education Courses, Major, and overall
    - 12 credit hours of 300 level and above must be taken in the major.
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)



- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)

- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)

- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following

- 3 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

- Child, Family, and Community Development students must choose PY 101 and PY 102 to satisfy Area IV: Social and Behavioral Sciences

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

19 Total Credits

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- 19 hours from the following:  
Approved Electives in ECH, ED, EDC, SOC, PY, or related fields

Grand Total Credits: **19**

### **Major Requirements**

Major Requirements

27 Total Credits

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- Complete all of the following
  - CFC Core
    - 12 hours from:
      - CFC305 - FAMILY, SCHOOLS & COMMUNITY (3)
      - CFC325 - POSITIVE YOUTH DEVELOPMENT (3)
      - CFC335 - CRITICAL ISSUES COMMUNITY (3)
      - CFC451 - LEADERSHIP YOUTH & COMMUNITY (3)
  - KIN Core
    - 6 hours from:
      - KIN340 - SCHOOL AND COMMUNITY HEALTH (3)
      - KIN455 - MOTOR LEARNING (3)
  - MGT Core
    - 9 hours from:
      - MGT301 - MANAGING ORGANIZATIONS (3)
      - MGT363 - HUMAN RESOURCE & LABOR REL MGT (3)
      - MGT410 - LEADERSHIP, PERSONAL DEV & ORG (3)

Grand Total Credits: **27**

#### **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

- 

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

- 

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

- 

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

- Rule Not Selected

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Child, Family, Community Development (BS) - Early Learning & Family Resources (Concentration)**

### **Description**

The BS in Child, Family, & Community Development with a concentration in Early Learning & Family Resources provides opportunities for students who wish to work with young children and their families in a community setting **outside** of a formal public or private school setting (without a state-issued teaching certification). This program develops leaders in the field who focus on improving the lives of young children and families through high-quality early care and education programs, non-profits, children's museums, recreation centers or similar specialized programming, etc. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Concentration Requirements**

Concentration Requirements

33 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 27 hours from:
    - ECH320 - DIFF INSTR FOR EARLY LEARNERS (3)
    - ECH330 - ASSESSMENT OF YOUNG LEARNERS (3)
    - ECH340 - LANGUAGE, SPEECH & LITERACY DEV (3)
    - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED413 - CHILDREN'S & ADOLESCENT LIT (3)
    - EDC316 - DIFFER INSTR FOR ECSE (3)
    - MGT320 - CAREER DEVELOPMENT (3)
    - MGT361 - ORGANIZATIONAL BEHAVIOR (3)
    - MGT408 - TEAMWORK & TEAM PROCESSES (3)
  - 6 hours from:
    - CFC495 - ELFR INTERNSHIP (6)

Grand Total Credits: **33**

## **Child, Family, Community Development (BS) - Recreation & Community Leadership (Concentration)**

### **Description**

The BS in Child, Family, & Community Development with a concentration in Recreation & Community Leadership prepares graduates for a career in the recreation and leisure settings. Students gain leadership skills through collaborating with diverse groups in a recreational setting and learn to plan and implement high quality recreational programming for youth, families, and the community they serve. This experience culminates in a recreation specific internship within the Huntsville community. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Concentration Requirements**

Concentration Requirements

33 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 27 hours from:
    - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
    - KIN361 - TEACHING TEAM SPORTS (3)
    - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
    - KIN363 - TEACHING FITNESS & WELLNESS (3)
    - SFM381 - FACILITIES AND EQUIPMENT MGT (3)
    - SFM484 - EVENT MANAGEMENT (3)
    - SFM470 - SPORT MARKETING (3)
    - CFC460 - PROG in REC/LEIS (3)
    - CFC461 - REC ADMIN (3)
  - 6 hours from:
    - CFC496 - RCL INTERNSHIP (6)

Grand Total Credits: **33**

## **Coaching (Minor)**

### **Program Description**

The minor in Coaching is open to individuals from any department on campus. It is designed to provide students with a general framework of knowledge and the skills to be effective coaches in school, recreational, and adult league settings. The program blends coursework in the fields of Sport Pedagogy, Exercise Science, and Sport Management to give students a well-rounded, cross-disciplined approach to athletic coaching. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

### **Number of Credit Hours**

18

### **Minor Requirements**

- Complete all of the following
  - Earned at least 1 of the following:
    - KIN361 - TEACHING TEAM SPORTS (3)
    - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
  - Complete
    - KIN345 - PRINCIPLES OF COACHING (3)
    - KIN463 - PSYCHOLOGICAL ASPECTS SPORT (3)
    - SFM381 - FACILITIES AND EQUIPMENT MGT (3)
    - SFM382 - SPORT LEADERSHIP (3)
    - SFM472 - ETHICS IN SPORT (3)

Grand Total Credits: **18**



## **Differentiated Instruction (MEd) (Fully Online)**

### **Program Description**

The MEd in Differentiated Instruction is an advanced graduate program for certified professional educators seeking to become better equipped to meet the ever-evolving needs of diverse students. The degree has twelve unique concentrations of focus with eleven of the concentrations approved by Council for the Accreditation of Educator Preparation (CAEP) and the Alabama State Department of Education to lead to a Class A teaching certificate. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

33

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Differentiated Instruction (MEd) (Fully Online) - Autism Spectrum Disorder (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in Autism Spectrum Disorders (ASD) focuses on how to plan, instruct, conduct assessments and collaborate to maximize learning opportunities for students with ASD. This program allows professional educators to be better equipped to work with students with ASD as well as other significant intellectual disabilities. This program leads to a Class A Collaborative Teaching Certification (K-6 or 6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

18 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 18 hours from:
    - ED570 - DIFF INSTRUCTION SPEC POP (3)
    - EDC655 - COLLAB & TRANSITION PLANNG (3)
    - EDC636 - INTRO STUD AUTISM SPECTR DISOR (3)
    - EDC645 - ASMT & BEHAVIOR APPLC ASD (3)
    - EDC655 - COLLAB & TRANSITION PLANNG (3)
    - EDC660 - PRCTL APPLC VIS INSTR STRATEGY (3)
  - Any graduate courses (500+) with ED or EDC prefix with Department Approval

#### Action Research Project

3 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED690 - MASTER'S ACTION RESEARCH PROJ (3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Elementary Education Differentiated (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in Elementary Education focuses on adjusting instruction and assessment to maximize learning opportunities for all students in the K-6 classroom. The overall "theme" of the program is differentiated instruction so students are provided in-depth instruction on different aspects of teaching that can impact students in different ways. The goal is to expand the professional educator's "toolbox" by teaching different paradigms of instruction. This program leads to a Class A Elementary Education Certification (K-6). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

18 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED570 - DIFF INSTRUCTION SPEC POP (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED635 - ASMT GUIDE DIFFRNT INSTRUCTION (3)
  - ED650 - DIFFNT ELEM MATH & SCI INSTRUC (3)
  - ED665 - DIFFNT ELEM LITERACY (R & W) (3)
  - ESL640 - INSTRUCT/EVAL LANG USAGE (3)

#### Action Research Project

3 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED690 - MASTER'S ACTION RESEARCH PROJ (3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - English Speakers of Other Languages (Concentration)**

### **Description**

The MEd in Differentiated Instruction with an English Speakers of Other Languages (ESOL) concentration focuses on how to best support the needs of students whose native language is not English. It facilitates professional development and offers resources to teachers, students and families, and provides differentiated instruction and assessment for English language learners. Students in this program are required to complete an internship which they may complete "on the job". This program leads to a Class A ESOL Certification (P-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

- Complete all of the following
  - Core Courses
    - Complete
      - ED530 - APPLIED MULTICULTURALISM (3)
      - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
      - ED540 - COGN DEV THEORIES LEARNING (3)
      - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)
  - Concentration Courses
    - Complete
      - ESL500 - POLICY & PRACTICE IN EDUC LING (3)
      - ESL510 - INTRO TO LANGUAGE SYSTEMS (3)
      - ESL520 - INSTR & ACADEMIC LANG CONT DOM (3)
      - ESL640 - INSTRUCT/EVAL LANG USAGE (3)
      - ED635 - ASMT GUIDE DIFFRNT INSTRUCTION (3)
      - ED692 - ADVANCED P-12 INTERNSHIP (3)
  - Action Research Project
    - Complete
      - ED690 - MASTER'S ACTION RESEARCH PROJ (3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Instructional Leadership (Concentration)**

### **Description**

The M.Ed. in Differentiated Instruction with an Instructional Leadership concentration focuses on preparing professional educators to transition to become an instructional leader within the school environment. Candidates will be prepared in the diverse facets of leadership required to effectively lead and manage schools. Candidates will be prepared in legal, ethical, and culture; developing collaborative environments; fiscal and personnel management; data analysis for school improvement; and serving as the instructional leader of the school. This program leads to an ALSDE Class A in Instructional Leadership. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - 9 hours from any ED, EDC, ESL, ECH, or EDL 500 - 600 level course(s)

#### Concentration Courses (Teaching Field)

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - EDL601 - LEGAL, ETHICAL, CULTURAL PRIN (3)
  - 602 - COLLAB INSTRUCT LEADERSHIP (3)
  - EDL603 - FISCAL MGMT & SCHOOL PERSONNEL (3)
  - EDL604 - INSTR LEADERSHIP-DIVERSE POP (3)
  - EDL605 - DATA ANALYSIS & SCHOOL IMPROV (3)
  - EDL606 - CULTIVATING COMMUNITY (3)

#### Internship

3 Total Credits

*keyboard\_arrow\_up*

- 3 hours from:
  - EDL691 - INSTR LEADER INTERNSHIP (1 - 3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Reading Specialist (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a Reading Specialist Concentration focuses on how to support literacy learning, teach struggling readers, facilitate professional development of reading teachers, and diagnose and respond to literacy challenges encountered by students. Students in this program are required to complete an internship during the entire program. This internship may be completed "on the job" but students must meet with the faculty advisor during the first semester to plan the internship. This program leads to a Class A Reading Specialist Certification (P-12). For further information, please refer to the department web site at

<https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

18 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED513 - LITERATURE FOR CHILDREN & ADOL (3)
  - ED605 - READING RESEARCH & INSTRUCTION (3)
  - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
  - ED612 - DIAGNOSIS & ASSMNT OF READING (3)
  - ED665 - DIFFNT ELEM LITERACY (R & W) (3)
  - ED692 - ADVANCED P-12 INTERNSHIP (3)

#### Action Research Project

3 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED690 - MASTER'S ACTION RESEARCH PROJ (3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Secondary Education Biology (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in Biology Secondary Education is an advanced program for secondary science teachers to advanced their knowledge of advanced biology content as well as developing advanced instructional strategies and methods. This program leads to a Class A Secondary Education Biology Certification (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

9 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)

#### Content Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from any BYS 500 - 600 level course(s)
  - 3 hours from:
    - BYS691 - SPECIAL TOPICS (1 - 4)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Secondary Education Chemistry (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a Chemistry Secondary Education concentration is an advanced program for secondary chemistry teachers to advanced their knowledge of advanced chemistry content as well as developing advanced instructional strategies and methods. This program leads to a Class A Secondary Education Chemistry Certification (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

9 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)

#### Content Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from any CH 500 - 700 level course(s)
  - 3 hours from:
    - CH735 - SEL TOP IN ORGANIC CHEM (3)

Grand Total Credits: **33**



## **Differentiated Instruction (MEd) (Fully Online) - Secondary Education English (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in English Secondary Education is an advanced program for secondary English teachers to advanced their knowledge of advanced English content as well as developing advanced instructional strategies and methods. This program leads to a Class A Secondary Education English Certification (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

9 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)

#### Content Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from any EH 500 - 600 level course(s)
  - 3 hours from:
    - EH601 - ACTION RESCH WRITING STUDIES (3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Secondary Education History (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in History Secondary Education is an advanced program for secondary science teachers to advanced their knowledge of advanced history content as well as developing advanced instructional strategies and methods. This program leads to a Class A Secondary Education History Certification (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

9 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)

#### Content Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from any HY 500 - 600 level course(s)
  - 3 hours from:
    - HY598 - STUDIES IN HISTORY (1 - 3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Secondary Education Math (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in Math Secondary Education is an advanced program for secondary math teachers to advance their knowledge of advanced math content as well as developing advanced instructional strategies and methods. This program leads to a Class A Secondary Education Math Certification (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

#### Core Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

#### Concentration Courses

9 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)

#### Content Courses

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from any MA 500 - 700 level course(s)
  - 3 hours from:
    - MA590 - SELECTED TOPICS IN MATH (3)

Grand Total Credits: **33**

## **Differentiated Instruction (MEd) (Fully Online) - Secondary Education Physics (Concentration)**

### **Description**

The MEd in Differentiated Instruction with a concentration in Physics Secondary Education is an advanced program for secondary physics teachers to advanced their knowledge of advanced physics content as well as developing advanced instructional strategies and methods. This program leads to a Class A Secondary Education Physics Certification (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/master-of-education>

### **Concentration Requirements**

Core Courses  
12 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)

Concentration Courses  
9 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)

Content Courses  
12 Total Credits  
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- Complete all of the following
  - 9 hours from any PH 500 - 700 level course(s)
  - 3 hours from:
    - PH679 - EDUCATION CAPSTONE COURSE (3)

Grand Total Credits: **33**

## **Early Childhood and Early Childhood Special Education PK-3 (BS)**

### **Program Description**

The BS in Early Childhood/Early Childhood Special Education focuses on preparing candidates to serve young learners from birth to age 8 in both general education preschools, special education preschools, and/or intervention services. The program is approved by Council for the Accreditation of Educator Preparation (CAEP) and the Alabama State Department of Education (ALSDE). Candidates will earn two ALSDE Class A teaching certificates in early childhood (P-3rd grade) AND Early Childhood Special Education (Birth-age 8). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Number of Credit Hours**

121

## **Degree Requirements**

### Degree Requirements

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- Degree Requirements (Education: Teaching)
  - Complete all of the following
    - Must have a 2.75 GPA in Education Courses, Major, and overall
    - 12 credit hours of 300 level and above must be taken in the major.
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:

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#### Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- 3 hours from:  
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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

*keyboard\_arrow\_up*

Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
  - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
  - WLC202J - INTERM FOREIGN LANG II:JAPANESE (3)
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- Early Childhood and Early Childhood Special Education students must choose CM 113 to satisfy Area II: Humanities

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:
 

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Area III: Mathematics and Sciences - Mathematics

      - MA105 - NATURE OF MATHEMATICS (3)
      - MA107 - ALGEBRA WITH APPLICATIONS (3)
      - MA110 - FINITE MATHEMATICS (3)
      - MA112 - PRECALCULUS ALGEBRA (3)
      - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
      - MA113 - PRECALCULUS TRIGONOMETRY (3)
      - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
      - MA171 - CALCULUS I (4)
      - MA181 - INTRODUCTION TO STATISTICS (3)
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 8 hours from:
 

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Area III: Mathematics and Sciences - Sciences

      - AST100 - SURVEY OF ASTRONOMY (4)
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST107 - EXPLORING THE COSMOS II (4)
      - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH121M - GENERAL CHEMISTRY I M (3)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
      - PH100 - CONCEPTUAL PHYSICS (4)
      - PH101 - GENERAL PHYSICS I (4)
      - PH102 - GENERAL PHYSICS II (4)
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
      - PH115 - GENERAL PHYSICS LAB II (1)
      - PH116 - GENERAL PHYSICS LAB III (1)
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)
          - HY104 - WORLD HISTORY SINCE 1500 (3)
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences -US
          - HY221 - UNITED STATES TO 1877 (3)
          - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)
          - HY104 - WORLD HISTORY SINCE 1500 (3)
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences -US
          - HY221 - UNITED STATES TO 1877 (3)
          - HY222 - UNITED STATES SINCE 1877 (3)
        - keyboard\_arrow\_up*
        - Area IV - History, Social and Behavioral Sciences - SBS
          - AES105 - WORLD REGIONAL GEOGRAPHY (3)
          - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
          - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
          - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
          - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
          - PSC260 - INTRO INTERNTL RELATIONS (3)
          - PY101 - GENERAL PSYCHOLOGY I (3)
          - PY201 - LIFE-SPAN DEVELOPMENT (3)
          - SOC100 - INTRO TO SOCIOLOGY (3)
          - SOC103 - INTRO TO CRIMINOLOGY (3)
          - ECN142 - PRINC OF MACROECONOMICS (3)
          - ECN143 - PRINC OF MICROECONOMICS (3)
    - Early Childhood and Early Childhood Special Education students must choose PY 101 and PY 102 to satisfy Area IV: Social and Behavioral Sciences

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

13 Total Credits

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- Complete all of the following
  - 9 hours from the following:
    - Mathematics
  - 4 hours from the following:
    - Science with Lab

Grand Total Credits: **13**

## **Major Requirements**

### Professional Studies

24 Total Credits

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- 24 hours from:
  - ED301 - INTRO TO EDUCATION PRACTICUM (0)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - ED308 - EDUCATIONAL PSYCHOLOGY (3)
  - ECH320 - DIFF INSTR FOR EARLY LEARNERS (3)
  - ECH330 - ASSESSMENT OF YOUNG LEARNERS (3)
  - ED350 - TECHNOLOGY IN CLASSROOM (3)
  - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
  - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - EDC316 - DIFFER INSTR FOR ECSE (3)

### Internship

12 Total Credits

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- 12 hours from:
  - ECH490 - EARLY CHILDHOOD INTERNSHIP (12)

### Teaching Field

33 Total Credits

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- 33 hours from:
  - ECH306 - PRINCPLS OF EARLY CHILDHOOD ED (3)
  - ECH340 - LANGUAGE, SPEECH & LITERCY DEV (3)
  - ED360 - EARLY CHILDHOOD EDUC PRACTICUM (3)
  - ED371 - TCHG ELEM LANGUAGE ARTS (3)
  - ED374 - TCHG ELEM MATHEMATICS (3)
  - ED375 - TCHG READING IN PRIMARY GRADES (3)
  - EDC302 - INTRO LOW INCIDENCE POPULATION (3)
  - EDC321 - COLLAB CONSU(PARENT-TCHR-TEAM) (3)
  - EDC341 - ASSESS/PLN TRANSITION K-12 STU (3)
  - EDC351 - BEHAVIOR ANLY & INTERVENTION (3)
  - EDC361 - ECSE PRACTICUM (3)

Grand Total Credits: **69**

## **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

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Fall

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No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

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Fall

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No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Elementary Education (BA)**

### **Program Description**

The BA in Elementary Education focuses on preparing candidates to serve students from kindergarten through the 6th grade. The program prepares candidates in pedagogy, classroom and behavior management, assessment, and working with students from diverse backgrounds. The program is approved by Council for the Accreditation of Educator Preparation (CAEP) and the Alabama State Department of Education and leads to an ALSDE Class B in Elementary Education (K-6). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Number of Credit Hours**

121

## **Degree Requirements**

### Degree Requirements

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- Degree Requirements (Education: Teaching)
  - Complete all of the following
    - Must have a 2.75 GPA in Education Courses, Major, and overall
    - 12 credit hours of 300 level and above must be taken in the major.
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

*keyboard\_arrow\_up*

- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

*keyboard\_arrow\_up*

- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)

- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

#### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
  - 3 hours from:

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#### Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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#### Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following

- 3 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences - World
  - HY103 - WORLD HISTORY TO 1500 (3)
  - HY104 - WORLD HISTORY SINCE 1500 (3)*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences -US
  - HY221 - UNITED STATES TO 1877 (3)
  - HY222 - UNITED STATES SINCE 1877 (3)
- 9 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences - World
  - HY103 - WORLD HISTORY TO 1500 (3)
  - HY104 - WORLD HISTORY SINCE 1500 (3)*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences -US
  - HY221 - UNITED STATES TO 1877 (3)
  - HY222 - UNITED STATES SINCE 1877 (3)*keyboard\_arrow\_up*  
 Area IV - History, Social and Behavioral Sciences - SBS
  - AES105 - WORLD REGIONAL GEOGRAPHY (3)
  - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
  - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
  - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
  - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
  - PSC260 - INTRO INTERNTL RELATIONS (3)
  - PY101 - GENERAL PSYCHOLOGY I (3)
  - PY201 - LIFE-SPAN DEVELOPMENT (3)
  - SOC100 - INTRO TO SOCIOLOGY (3)
  - SOC103 - INTRO TO CRIMINOLOGY (3)
  - ECN142 - PRINC OF MACROECONOMICS (3)
  - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

3 Total Credits

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- 3 hours from the following:

Grand Total Credits: **3**



## **Major Requirements**

Professional Courses

30 Total Credits

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- Complete all of the following
  - 18 hours from:
    - ED301 - INTRO TO EDUCATION PRACTICUM (0)
    - ED307 - MULTICULTURAL FND EDUCATION (3)
    - ED308 - EDUCATIONAL PSYCHOLOGY (3)
    - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED350 - TECHNOLOGY IN CLASSROOM (3)
    - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
    - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - 12 hours from:
    - ED493 - ELEMENTARY SCHOOL INTERNSHIP (12)

Teaching Field

28 Total Credits

*keyboard\_arrow\_up*

- 28 hours from:
  - ED315 - EDUC EVALUATION & MEASUREMENT (3)
  - ED371 - TCHG ELEM LANGUAGE ARTS (3)
  - ED372 - TCHG ELEM SOCIAL STUDIES (3)
  - ED373 - TCHG NATURL/HLTH SCIENCE (3)
  - ED374 - TCHG ELEM MATHEMATICS (3)
  - ED375 - TCHG READING IN PRIMARY GRADES (3)
  - ED405 - RDG STRATEGIES INTERMED GRADES (3)
  - ED310 - TCHNG THE ARTS IN ELEM SCHOOLS (2 - 3)
  - ED360 - EARLY CHILDHOOD EDUC PRACTICUM (3)
  - KIN464 - HEALTH/PE FOR ELEM TEACHERS (2)

Grand Total Credits: **58**

#### **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

•

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Elementary Education (BA) - Collaborative (Concentration)**

### **Description**

The BA in Elementary Education with a concentration in Collaborative Teaching combines the components of the elementary program of study with additional courses and fieldwork focused on providing services to students with disabilities. Upon completion of this program, candidates are eligible for two distinct ALSDE Class B Teaching Certifications in Elementary Education (K-6) and Collaborative Teaching (K-6). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Concentration Requirements**

Teaching Field  
15 Total Credits  
*keyboard\_arrow\_up*

- 15 hours from:
  - EDC302 - INTRO LOW INCIDENCE POPULATION (3)
  - EDC321 - COLLAB CONSU(PARENT-TCHR-TEAM) (3)
  - EDC331 - CRITICAL ISSUES IN SPEC EDUC (3)
  - EDC341 - ASSESS/PLN TRANSITION K-12 STU (3)
  - EDC351 - BEHAVIOR ANLY & INTERVENTION (3)

Grand Total Credits: **15**

## **Elementary Education (BA) - Elementary Education, General (Concentration)**

### **Description**

The BA in Elementary Education with a General concentration focuses on preparing candidates to serve students from kindergarten through the 6th grade. The program prepares candidates in pedagogy, classroom and behavior management, assessment, and working with students from diverse backgrounds. The program leads to an ALSDE Class B in Elementary Education (K-6). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

## **Concentration Requirements**

Teaching Field

9 Total Credits

*keyboard\_arrow\_up*

Diversity Electives

- Complete all of the following
  - 9 hours from:
    - ED401 - FNDS OF REFLECTIVE TEACHING (3)
    - ED402 - SPECIAL TOPICS IN EDUCATION (3)
    - ED413 - CHILDREN'S & ADOLESCENT LIT (3)
    - EDC302 - INTRO LOW INCIDENCE POPULATION (3)
    - EDC321 - COLLAB CONSU(PARENT-TCHR-TEAM) (3)
    - EDC331 - CRITICAL ISSUES IN SPEC EDUC (3)
    - EDC341 - ASSESS/PLN TRANSITION K-12 STU (3)
    - EDC351 - BEHAVIOR ANLY & INTERVENTION (3)
    - ESL400 - POLICY & PRAC IN EDUC LINGUIST (3)
    - ESL410 - INTRO TO LANGUAGE SYSTEMS (3)
    - ESL420 - INSTR & ACADMC LANG CNTNT DOMN (3)
    - ESL430 - DESIGN INSTRUCT/ACADEMIC LANG (3)
    - ESL440 - INSTRUCT/EVAL LANG USAGE (3)
    - ECH320 - DIFF INSTR FOR EARLY LEARNERS (3)
    - ECH320 - DIFF INSTR FOR EARLY LEARNERS (3)
    - ECH330 - ASSESSMENT OF YOUNG LEARNERS (3)
    - ECH340 - LANGUAGE, SPEECH & LITERCY DEV (3)
  - Other ED courses approved by the Department

Grand Total Credits: **9**

## **Elementary Education (BA) - Language and Culture (Concentration)**

### **Description**

The BA in Elementary Education with a concentration in Language and Culture combines the components of the elementary program of study with additional courses and fieldwork focused on providing services to ESOL students. Upon completion of this program, candidates are eligible for a ALSDE Class B Teaching Certifications in Elementary Education (K-6) but have the educational background to become an ESOL educator after two years of teaching experience and passage of required exams. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

## **Concentration Requirements**

Teaching Field

15 Total Credits

*keyboard\_arrow\_up*

- 15 hours from:
  - ED413 - CHILDREN'S & ADOLESCENT LIT (3)
  - ESL400 - POLICY & PRAC IN EDUC LINGUIST (3)
  - ESL410 - INTRO TO LANGUAGE SYSTEMS (3)
  - ESL420 - INSTR & ACADMC LANG CNTNT DOMN (3)
  - ESL440 - INSTRUCT/EVAL LANG USAGE (3)

Grand Total Credits: **15**

## **Elementary Education (MAT) (Fully Online)**

## **Program Description**

The MAT in Elementary Education prepares individuals who have completed a non-education baccalaureate degree from a regionally accredited institution areas for careers in elementary education. The program is approved by Council for the Accreditation of Educator Preparation (CAEP) and the Alabama State Department of Education (ALSDE). The program leads to an ALSDE Class Alternative A Elementary Education Certification (K-6). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

## **Delivery Method**

Fully Online

## **Number of Credit Hours**

46

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

### Curriculum

6 Total Credits

*keyboard\_arrow\_up*

- Complete
  - ED604 - CONTRIBUTION PSY TO EDUC (3)
  - ED609 - CLASSROOM & BEHAVIOR MGMT (3)

### Methods of Teaching

3 Total Credits

*keyboard\_arrow\_up*

- Complete
  - EDC511 - INSTRUCTIONAL STRATEGIES (3)

Diverse Populations

3 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)

Literacy  
6 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
  - ED575 - READING PRIMARY GRADES (3)

Professionalism  
0 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED501 - INTRO TO EDUCATION

Using Assessment Data to Improve Student Learning  
3 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED607 - EDU LEADER AS EVALUATOR (3)

Survey of Special Education Coursework  
3 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED593 - ED EXCEPT CHILD & YOUTH (3)

Internship  
3 - 6 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED693 - ELEMENTARY INTERNSHIP (3 - 6)

Teaching Field  
19 - 20 Total Credits  
*keyboard\_arrow\_up*

- Complete
  - ED615 - READING INTERMEDIATE GRD (3)
  - ED671 - TCHG ELEM LANGUAGE ARTS (3)
  - ED672 - TCHG ELEM SOCIAL STUDIES (3)
  - ED673 - TCHG NATURAL/HLTH SCIENCE (3)
  - ED674 - TCHG ELEM. MATHEMATICS (3)
  - ED610 - TEACHING FINE ARTS ELEM SCHOOL (2 - 3)
  - KIN564 - HEALTH/PE FOR ELEM TEACHER (2)

Grand Total Credits: **46 - 50**

## **Health & Nutrition (Minor)**

### **Program Description**

The minor in Health and Nutrition is open to all UAH students looking to expand their knowledge of health and wellness. The goals of the program are to increase nutritional knowledge, expose individuals to the benefits of exercise, and help destigmatize mental health. Increased knowledge in all areas is beneficial to all students regardless of their major. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - KIN200 - CONTEMPORARY NUTRITION (3)
    - KIN240 - HEALTH & WELLNESS CONCEPTS (3)
    - KIN290 - EX TECHNIQUES & LEADERSHIP (3)
    - KIN300 - NUTRITION FOR FITNESS & SPORT (3)
    - KIN400 - NUTRITION IN HEALTH & DISEASE (3)
    - PY333 - PY OF ADJUSTMENT & ADAPTATION (3)
    - PY437 - PSYCHOBIOLOGY STRESS & ILLNESS (3)
  - PY 437 is only offered once, every other year. If the course is not offered when the student needs it, they may earn the minor without that course, for a total of 18 hours; however, if the course is offered during the time frame that the student needs it, they will be required to take it, thus completing a full 21 hours.

Grand Total Credits: **21**

## **Kinesiology (BS)**

### **Program Description**

The BS in Kinesiology at UAH offers concentrations in Exercise Science and Physical Education. The areas of study provide classroom education, practical experiences, internship opportunities, and research experience for students seeking career opportunities in healthcare, human performance, and education. For further information, please refer to the department web site at [www.uah.edu/kinesiology](http://www.uah.edu/kinesiology)

### **Number of Credit Hours**

121

### **Degree Requirements**

Degree Requirements  
*keyboard\_arrow\_up*

- Degree Requirements (Education: Kinesiology)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)



- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

*keyboard\_arrow\_up*

Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

*keyboard\_arrow\_up*

Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)

- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV

- Complete all of the following

- 3 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)

- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

### **Major Requirements**

Kinesiology Core

12 Total Credits

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- 12 hours from:
  - KIN240 - HEALTH & WELLNESS CONCEPTS (3)
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
  - KIN455 - MOTOR LEARNING (3)
  - KIN457 - MEASUREMNT & EVAL IN PHYS ACTV (3)

Grand Total Credits: **12**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 4 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - 3 hours from:
    - MA110 - FINITE MATHEMATICS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - Earned at least 1 of the following:
    - FYE101D - CHARGER SUCCESS - EDUCATION (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)
  - 3 Hours Fine Art

Spring

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- Complete all of the following
  - 10 hours from:
    - CH101 - INTRO TO CHEMISTRY (3)

- CH105 - INTRO CHEMISTRY LAB (1)
- CM113 - PUBLIC SPEAKING (3)
- KIN240 - HEALTH & WELLNESS CONCEPTS (3)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 3 Hours History

Year 2

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Fall

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- Complete all of the following
  - 13 hours from:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS215L - HUMAN ANAT & PHYS I LAB
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - KIN200 - CONTEMPORARY NUTRITION (3)
    - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 10 hours from:
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - BYS216L - HUMAN ANAT & PHYS II LAB
    - KIN290 - EX TECHNIQUES & LEADERSHIP (3)
    - SFM265 - INTRO TO SPORT MGMT (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
  - 3 Hours Social & Behavioral Science

Year 3

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Fall

*keyboard\_arrow\_up*

- hours from:

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## **Kinesiology (BS) - Exercise Science (Concentration)**

### **Description**

The BS in Kinesiology with a concentration in Exercise Science prepares students to work in human performance fields such as personal training, corporate wellness, strength and conditioning, or cardiopulmonary rehabilitation. Students study foundational sciences, such as anatomic kinesiology, biomechanics, exercise physiology, motor behavior, and the social psychology of physical activity. Graduates are prepared for entry into pre-health professional programs such as physical and occupational therapy and well-positioned for graduate school in areas of exercise physiology, biomechanics, and exercise science. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

### **Concentration Requirements**

Area V (Pre-Professional) Requirement

33 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - FYE101D - CHARGER SUCCESS - EDUCATION (1)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS215L - HUMAN ANAT & PHYS I LAB
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - BYS216L - HUMAN ANAT & PHYS II LAB
    - BYS320 - MEDICAL TERMINOLOGY (3)
    - MA110 - FINITE MATHEMATICS (3)
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - Chemistry Requirement
  - Complete 1 of the following
    - Complete
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
    - Complete
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
  - For MA 110: higher math will satisfy requirement
  - Courses in this area may also fulfill Charger Foundations requirements.

Concentration Requirements

49 Total Credits

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- 43 hours from:
  - KIN200 - CONTEMPORARY NUTRITION (3)
  - SFM265 - INTRO TO SPORT MGMT (3)
  - KIN290 - EX TECHNIQUES & LEADERSHIP (3)
  - KIN300 - NUTRITION FOR FITNESS & SPORT (3)
  - KIN375 - STRENGTH TRNG & CONDITION (3)
  - KIN327 - EXERCISE PHYSIOLOGY (3)
  - KIN328 - EXERCISE PHYSIOLOGY (1)
  - KIN351 - EXER TEST & PRECR HEALTHY POP (3)
  - KIN352 - EXER TEST & PRECR SPECIAL POP (3)
  - KIN418 - STRUCTURE/FUNCTIONAL KIN (3)
  - KIN451 - RESEARCH EXERCISE SCIENCE I (3)

- KIN452 - RESEARCH EXERCISE SCIENCE II (3)
- KIN463 - PSYCHOLOGICAL ASPECTS SPORT (3)
- KIN490 - EXERCISE SCIENCE INTERNSHIP (6)

Electives

6 Total Credits

*keyboard\_arrow\_up*

- 6 hours from:
  - KIN361 - TEACHING TEAM SPORTS (3)
  - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
  - KIN370 - ADAPTED PHYSICAL EDUCATION (3)
  - KIN400 - NUTRITION IN HEALTH & DISEASE (3)
  - KIN419 - EXERCISE & SPORT BIOMECHANICS (3)
  - KIN345 - PRINCIPLES OF COACHING (3)
  - KIN428 - ENVIRONMENTAL EXERCISE PHYSIOL (3)
  - KIN460 - SPECIAL TOPICS KINESIOLOGY I (3)
  - KIN461 - SPECIAL TOPICS KINESIOLOGY II (3)

Grand Total Credits: **82**

#### **4-Year Plan**

Year 1

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 4 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - 3 hours from:
    - MA110 - FINITE MATHEMATICS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - Earned at least 1 of the following:
    - FYE101D - CHARGER SUCCESS - EDUCATION (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 Hours Fine Art

Spring

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- Complete all of the following
  - 10 hours from:
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - CM113 - PUBLIC SPEAKING (3)
    - KIN240 - HEALTH & WELLNESS CONCEPTS (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours History

Year 2

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 13 hours from:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS215L - HUMAN ANAT & PHYS I LAB
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - KIN200 - CONTEMPORARY NUTRITION (3)
    - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
  - 3 Hours Literature

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 10 hours from:
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - BYS216L - HUMAN ANAT & PHYS II LAB
    - KIN290 - EX TECHNIQUES & LEADERSHIP (3)
    - SFM265 - INTRO TO SPORT MGMT (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
  - 3 Hours Social & Behavioral Science

Year 3

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 11 hours from:
    - KIN327 - EXERCISE PHYSIOLOGY (3)
    - KIN328 - EXERCISE PHYSIOLOGY (1)
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
    - KIN300 - NUTRITION FOR FITNESS & SPORT (3)
  - 3 Hours Kinesiology Elective
  - 3 Hours 2nd History or 2nd Social & Behavioral Science

Spring

*keyboard\_arrow\_up*

- 16 hours from:
  - BYS320 - MEDICAL TERMINOLOGY (3)
  - KIN375 - STRENGTH TRNG & CONDITION (3)
  - KIN351 - EXER TEST & PRECR HEALTHY POP (3)
  - KIN455 - MOTOR LEARNING (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - PY304 - PSYCHOLOGICAL STATISTICS LAB (1)

Year 4

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - KIN352 - EXER TEST & PRECR SPECIAL POP (3)
    - KIN418 - STRUCTURE/FUNCTIONAL KIN (3)
    - KIN451 - RESEARCH EXERCISE SCIENCE I (3)
    - KIN457 - MEASUREMNT & EVAL IN PHYS ACTV (3)



- 3 Hours Kinesiology Elective

Spring

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- 12 hours from:
  - KIN452 - RESEARCH EXERCISE SCIENCE II (3)
  - KIN463 - PSYCHOLOGICAL ASPECTS SPORT (3)
  - KIN490 - EXERCISE SCIENCE INTERNSHIP (6)

## **Kinesiology (BS) - JUMP: BS KIN (Exercise Science), Physical Education (MAT PCH)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Kinesiology with an Exercise Science concentration to an MAT P-12 with a Physical Education concentration is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

P-12 Education (MAT)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_KIN@uah.edu

### **JUMP Landing (Graduate Program)**

MAT\_P12Teaching@uah.edu

## **Kinesiology (BS) - Physical Education P-12 (Concentration)**

### **Description**

The BS in Kinesiology with a concentration in Physical Education prepares P-12 Physical Education teachers for employment through instruction in the art of teaching, as well as management of a physically active classroom. In addition, students have the opportunity to spend time in schools through our expanded field experience placement. Students are required to meet all Alabama Quality Teaching Standards and specific Physical Education standards established by the Alabama State Department of Education (ALSDE) and the Society of Health and Physical Educators (SHAPE). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

## **Concentration Requirements**

### Area V (Pre-Professional) Requirement

33 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - FYE101D - CHARGER SUCCESS - EDUCATION (1)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS215L - HUMAN ANAT & PHYS I LAB
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - BYS216L - HUMAN ANAT & PHYS II LAB
    - CM113 - PUBLIC SPEAKING (3)
    - KIN327 - EXERCISE PHYSIOLOGY (3)
    - KIN328 - EXERCISE PHYSIOLOGY (1)
    - MA110 - FINITE MATHEMATICS (3)
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY201 - LIFE-SPAN DEVELOPMENT (3)

### Chemistry Requirement

- Complete 1 of the following
  - Complete
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
  - Complete
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
- For MA 110: higher math will satisfy requirement
- Courses in this area may also fulfill Charger Foundations requirements.

### Education Requirements

27 Total Credits

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- 27 hours from:
  - ED301 - INTRO TO EDUCATION PRACTICUM (0)
  - ED307 - MULTICULTURAL FND EDUCATION (3)
  - ED308 - EDUCATIONAL PSYCHOLOGY (3)
  - ED408 - TCHG READING/CONTENT AREA (3)
  - ED499 - P-12 INTERNSHIP (12)
  - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
  - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)

### Concentration Requirements

30 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 24 hours from:
    - KIN340 - SCHOOL AND COMMUNITY HEALTH (3)
    - KIN361 - TEACHING TEAM SPORTS (3)
    - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
    - KIN363 - TEACHING FITNESS & WELLNESS (3)
    - KIN370 - ADAPTED PHYSICAL EDUCATION (3)
    - KIN421 - INST APP TO SPORT PEDAGOGY (3)
    - KIN462 - TEACHING PHYS ED IN ELEM SCH (3)
    - KIN465 - TEACHING SECONDARY PE (3)
  - 6 hours from any KIN 300 - 400 level course(s)

Grand Total Credits: **90**

## **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 7 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - KIN240 - HEALTH & WELLNESS CONCEPTS (3)
  - 3 hours from:
    - MA110 - FINITE MATHEMATICS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - Earned at least 1 of the following:
    - FYE101D - CHARGER SUCCESS - EDUCATION (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 Hours Fine Art

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 10 hours from:
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - CM113 - PUBLIC SPEAKING (3)
    - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours History

Year 2

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 13 hours from:
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS215L - HUMAN ANAT & PHYS I LAB
    - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
    - KIN370 - ADAPTED PHYSICAL EDUCATION (3)
    - PY101 - GENERAL PSYCHOLOGY I (3)
  - 3 Hours Literature

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 10 hours from:
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - BYS216L - HUMAN ANAT & PHYS II LAB

- KIN363 - TEACHING FITNESS & WELLNESS (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
- 3 Hours 2nd History or 3rd Social & Behavioral Science

Year 3

*keyboard\_arrow\_up*

No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - ED301 - INTRO TO EDUCATION PRACTICUM (0)
    - ED307 - MULTICULTURAL FND EDUCATION (3)
    - ED308 - EDUCATIONAL PSYCHOLOGY (3)
    - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
    - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - 3 Hours Kinesiology Elective (KIN 300+ or 400+ Course)

Spring

*keyboard\_arrow\_up*

- 16 hours from:
  - KIN327 - EXERCISE PHYSIOLOGY (3)
  - KIN328 - EXERCISE PHYSIOLOGY (1)
  - KIN340 - SCHOOL AND COMMUNITY HEALTH (3)
  - KIN361 - TEACHING TEAM SPORTS (3)
  - KIN455 - MOTOR LEARNING (3)
  - KIN462 - TEACHING PHYS ED IN ELEM SCH (3)

Year 4

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No Rules

Fall

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- Complete all of the following
  - 12 hours from:
    - KIN421 - INST APP TO SPORT PEDAGOGY (3)
    - KIN457 - MEASUREMNT & EVAL IN PHYS ACTV (3)
    - KIN465 - TEACHING SECONDARY PE (3)
    - ED408 - TCHG READING/CONTENT AREA (3)
  - 3 Hours Kinesiology Elective (KIN 300+ or 400+ Course)

Spring

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- 12 hours from:
  - ED499 - P-12 INTERNSHIP (12)

## **Kinesiology (MS)**

### **Program Description**

The MS in Kinesiology program is aimed to further the education and practical experiences of individuals in health and human performance-related fields. It positions students for expanded roles in the fields of health and human performance. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

### **Number of Credit Hours**

30

### **Degree Requirements**

- Graduate School Masters Requirements
  - Complete all of the following
    - Master's Transfer Credits
      - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
    - Complete 1 of the following
      - Non-Thesis
        - 30 semester hours of graduate coursework.
      - Thesis
        - Complete all of the following
          - 24 semester hours of graduate course work
          - 6 credit hours of thesis coursework (699)
          - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### **Major Requirements**

Core Requirements

15 Total Credits

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- 15 hours from:
  - KIN510 - RESEARCH METHODS IN KIN (3)
  - KIN515 - SEMINAR IN KINESIOLOGY (2)
  - KIN518 - ADV HUMAN PERFORMANCE & TESTING (3)
  - KIN520 - LAB TECHNIQUES (3)
  - PY611 - STAT FOR EXPERI METHODS (3)

Grand Total Credits: **15**

## **Kinesiology (MS) - Clinical Exercise Physiology (Concentration)**

### **Description**

The Department of Kinesiology at The University of Alabama in Huntsville (UAH) proposes the creation of a graduate program in Kinesiology. Within the program, we propose an initial concentration in Sports Science, an emerging and lucrative field in the world of human performance. The concentration will feature a thesis and non-thesis option for students. During the second year of both options, Sports Science students will focus more on practical applications, as they undertake a two-semester practicum as a team Sport Scientist. Non-thesis Sports Science students will be required to take a comprehensive examination in their final semester and deliver a final presentation associated with their practicum experience.

Upon completion of this program, students will be able to:

- Apply knowledge gained of sport science technology, including the use of wearable technology, to athlete testing, monitoring, and recovery.
- Analyze the factors of training, competition, and their effect on the physiological aspects of exercise.
- Investigate and evaluate various human and athletic performance variables utilizing state-of-the-art equipment and advanced laboratory techniques.
- Appraise human performance through conducting evidence-based research that demonstrates a proficiency in professional writing and presentation skills that show an understanding, application, and interpretation of statistical procedures, validating equipment and practices, and implementing reliable assessments of instrumentation.
- Implement classroom and laboratory concepts, as well as theories in the practical world of Sports Science.

### **Concentration Requirements**

- Complete all of the following
  - 9 hours from:
    - KIN527 - CLINICAL EXERCISE PHYSIOLOGY (3)
    - KIN627 - LIFESPAN PHYS. ACTIVITY HEALTH (3)
    - KIN657 - CARDIO. EXERCISE PHYSIOLOGY (3)
  - Complete 1 of the following
    - 6 hours from:
      - KIN699 - MASTERS THESIS KINESIOLOGY (3)
    - 6 hours from:
      - KIN547 - PSYCH ASPECTS HEALTH/DISEASE (3)
      - KIN670 - CAPSTONE CLINICAL EX PHYS (3)

Grand Total Credits: **15**

## **Kinesiology (MS) - Sports Science (Concentration)**

### **Description**

The MS in Kinesiology with a concentration in Sports Science uses the power of data and technology to enhance human performance at all levels. The curriculum consists of classes that expose students to advanced laboratory measurements, promote enhancement of performance assessment skills with cutting-edge technology, and further expert research skills. This concentration equips students with advanced classroom content and an immersive practical experience to prepare them for a career in the next evolution of player performance assessment and enhancement. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

### **Concentration Requirements**

Concentration Requirements

15 Total Credits

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- Complete all of the following
  - 9 hours from:
    - KIN630 - PRACTICUM I (3)
    - KIN631 - PRACTICUM II (3)
    - BYS531 - BIOLOGICAL DATA SKILLS (3)
  - Thesis/Non-Thesis Option
  - Complete 1 of the following
    - Thesis Option
      - 6 hours from:
        - KIN699 - MASTERS THESIS KINESIOLOGY (3)
    - Non-Thesis Option
      - Complete all of the following
        - 3 hours from:
          - KIN519 - EXERCISE & SPORT BIOMECHANICS (3)
          - KIN527 - CLINICAL EXERCISE PHYSIOLOGY (3)
          - KIN528 - ENVIRONMENTAL EXERC PHYSIOLOGY (3)
        - 3 hours from any KIN 500 - 600 level course(s)

Grand Total Credits: **15**

## **P-12 Education (MAT)**

### **Program Description**

The MAT P-12 focuses on educating individuals who already possess an undergraduate degree but wish to pursue teacher education to prepare leaders of tomorrow. It provides a unique opportunity for individuals with diverse backgrounds to earn a graduate degree while simultaneously achieving initial certification to teach students in multiple concentrations, including Music (Instrumental and Choral) and Physical Education. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### **Number of Credit Hours**



## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

### Professional Studies

21 Total Credits

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- Complete
  - ED501 - INTRO TO EDUCATION
  - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - ED604 - CONTRIBUTION PSY TO EDUC (3)
  - ED607 - EDU LEADER AS EVALUATOR (3)
  - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
  - ED609 - CLASSROOM & BEHAVIOR MGMT (3)

### Internship

3 Total Credits

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- Complete all of the following
  - 3 hours from:
    - ED696 - P-12 INTERNSHIP (3 - 6)
  - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Grand Total Credits: **24**

## **P-12 Education (MAT) - Music Choral (Concentration)**

### **Description**

The MAT (P-12) with a concentration in Choral Music Education is an opportunity for those who already possess a bachelor's degree to earn their initial teaching certificate. Students enrolled in the program take a blend of core Curriculum/Instruction and Music content-specific coursework. Upon completion of the program and passing scores on the edTPA teacher licensure assessment, students are eligible for a P-12 teaching certification in the subject of Choral Music. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### **Concentration Requirements**

Teaching Field

21 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - MUE527 - TEACHING GENERAL MUSIC (3)
    - MUE528 - VOCAL/CHORAL METH SEC SCH (3)
    - MU501 - FORM AND ANALYSIS (3)
    - MU516 - ORCHESTRATION (3)
    - MU525 - ADVANCED CONDUCTING (2)
    - MU611 - SEMINAR IN MUSIC HISTORY & LIT (3)
  - Earned at least 1 of the following:
    - MUX590 - UAH CONCERT CHOIR (1)
    - MUX591 - UAH CHAMBER CHOIR (1)
- Principal Instrument
  - 3 hours from:
    - MUA511 - STUDIO INSTR - VOICE (1.5)
    - MUA521 - STUDIO INSTR - ORGAN (1.5)
    - MUA531 - STUDIO INSTR - PIANO (1.5)
    - MUA551 - STUDIO INSTR - STRINGS (1.5)
    - MUA561 - STUDIO INSTR - WOODWINDS (1.5)
    - MUA271 - STUDIO INSTR-BRASS (1.5)
    - MUA581 - STUDIO INSTR - PERCUSSION (1.5)
- Required Proficiencies
  - Complete all of the following
    - Piano Proficiency
    - Performance Proficiency

Grand Total Credits: **21**

## **P-12 Education (MAT) - Music Instrumental (Concentration)**

### **Description**

The MAT (P-12) with a concentration in Instrumental Music Education is an opportunity for those who already possess a bachelor's degree to earn their initial teaching certificate. Students enrolled in the program take a blend of core Curriculum/Instruction and Music content-specific coursework. Upon completion of the program and passing scores on the edTPA teacher licensure assessment, students are eligible for a P-12 teaching certification in the subject of Instrumental Music. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### **Concentration Requirements**

Teaching Field

21 Total Credits

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- Complete all of the following

- Complete

- MUE527 - TEACHING GENERAL MUSIC (3)
- MUE529 - ORG & DIR INSTRU GRP SEC (3)
- MU501 - FORM AND ANALYSIS (3)
- MU516 - ORCHESTRATION (3)
- MU525 - ADVANCED CONDUCTING (2)
- MU611 - SEMINAR IN MUSIC HISTORY & LIT (3)
- MUX599 - UAH WIND ENSEMBLE (1)

Principal Instrument

- 3 hours from:

- MUA511 - STUDIO INSTR - VOICE (1.5)
- MUA521 - STUDIO INSTR - ORGAN (1.5)
- MUA531 - STUDIO INSTR - PIANO (1.5)
- MUA551 - STUDIO INSTR - STRINGS (1.5)
- MUA561 - STUDIO INSTR - WOODWINDS (1.5)
- MUA571 - STUDIO INSTR - BRASS (1.5)
- MUA581 - STUDIO INSTR - PERCUSSION (1.5)

Required Proficiencies

- Complete all of the following
  - Piano Proficiency
  - Performance Proficiency

Grand Total Credits: **21**

## **P-12 Education (MAT) - Physical Education (Concentration)**

### **Description**

The MAT (P-12) with a concentration in Physical Education is an opportunity for those who already possess a bachelor's degree to earn their initial teaching certificate. Students enrolled in the program take a blend of core Curriculum/Instruction and Physical Education content-specific coursework. Upon completion of the program and passing scores on the edTPA teacher licensure assessment, students are eligible for a P-12 teaching certification in the subject of Physical Education. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### **Concentration Requirements**

Teaching Field  
18 Total Credits  
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- Complete
  - KIN540 - SCHOOL AND COMMUNITY HEALTH (3)
  - KIN570 - ADAPTED PHYSICAL EDUCATION (3)
  - KIN621 - INST APPR TO SPT PED (3)
  - KIN655 - MOTOR LEARNING (3)
  - KIN662 - ELEM PE METHODS (3)
  - KIN665 - METHODS TEACHG PHYS EDUC SEC (3)

Grand Total Credits: **18**

## **Secondary Education (BS)**

### **Program Description**

The BS in Secondary Education prepares candidates as professional educators to teach students in grades 6-12. Candidates combine professional education courses with upper-level coursework within a specific content area. The program is accredited by Council for the Accreditation of Educator Preparation (CAEP) and the Alabama State Department of Education (ALSDE) and leads to a Class B teaching certificate within the content field. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### **Number of Credit Hours**

120

### **Degree Requirements**

Degree Requirements  
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- Degree Requirements (Education: Teaching)
  - Complete all of the following
    - Must have a 2.75 GPA in Education Courses, Major, and overall
    - 12 credit hours of 300 level and above must be taken in the major.
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

### **General Education (Charger Foundations) Requirements**

Charger Foundations  
41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

#### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

#### Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARS160 - DRAWING: FOUNDATIONS (3)
        - MU100 - INTRO TO MUSIC LITERATURE (3)
        - TH122 - THEATRE APPRECIATION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
      - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
        - EH207 - READINGS LITERATURE/CULTURE I (3)
        - EH208 - READINGS LITERATURE/CULTURE 2 (3)
        - EH241 - LITERATURE WITHOUT BORDERS (3)
        - EH242 - MYTHOLOGY (3)
        - EH243 - PROTEST LITERATURE (3)
        - EH244 - HEROES &/OR MONSTERS (3)
        - EH245 - LOVE &/OR ROMANCE (3)
        - EH246 - SPECULATIVE REALITIES (3)
      - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Non-Literature
        - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARH120 - ARH SUR: SPECIAL TOPICS (3)
        - CM113 - PUBLIC SPEAKING (3)
        - FMA123 - INTRO TO FILM STUDIES (3)

- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- All Secondary Education students must take CM 113 to satisfy Area II: Humanities in Charger Foundations.

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

*keyboard\_arrow\_up*

Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)

- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following

- 3 hours from:

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)



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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

- All Secondary Education students must take both PY 101 and PY 201 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

### **Major Requirements**

Professional Studies (Education Requirements)

36 Total Credits

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- Complete all of the following
  - 24 hours from:
    - ED301 - INTRO TO EDUCATION PRACTICUM (0)
    - ED307 - MULTICULTURAL FND EDUCATION (3)
    - ED308 - EDUCATIONAL PSYCHOLOGY (3)
    - ED309 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED350 - TECHNOLOGY IN CLASSROOM (3)
    - ED408 - TCHG READING/CONTENT AREA (3)
    - ED410 - FOUNDATIONS EDUC EVALUAT (3)
    - EDC301 - TCHG THE EXCEPTIONAL CHILD (3)
    - EDC311 - INSTR STRATEGIES INCLUSIVE CLR (3)
  - 12 hours from:
    - ED497 - HIGH SCHOOL INTERNSHIP (12)

Grand Total Credits: **36**

#### **4-Year Plan**

Year 1

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

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Fall

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No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

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Fall

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No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 4

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

## Secondary Education (BS) - Secondary Education Biology (Concentration)

### Description

The BS in Secondary Education with a concentration in Biology prepares candidates as professional educators to teach biology, anatomy and physiology, and other related sciences in grades 6 – 12. With careful planning, students can complete both this program and a BS in Biological Sciences. This program leads to an ALSDE Class B Teaching Certification in Biology (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

36 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED423 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
      - ED433 - TEACH SC MID & SEC SCHOOL II (2 - 3)
  - Biology Courses
    - Complete all of the following
      - 26 hours from:
        - BYS119 - PRINCIPLES OF BIOLOGY (3)
        - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
        - BYS120 - ORGANISMAL BIOLOGY (3)
        - BYS122 - ORGANISMAL BIOLOGY LAB (1)
        - BYS219 - GENETICS AND EVOLUTION (3)
        - BYS221 - GENETICS AND EVOLUTION LAB (1)
        - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
        - BYS300L - CELL & DEVELOPMENTAL BIO LAB
        - BYS312 - PRINCIPLES OF ECOLOGY (4)
        - BYS321 - GENERAL MICROBIOLOGY I (4)
        - BYS321L - GENERAL MICROBIOLOGY I LAB
        - BYS490 - SENIOR CAPSTONE (2)
      - 6 hours from any BYS 300 - 400 level course(s)

Grand Total Credits: **36**

## Secondary Education (BS) - Secondary Education Biology General Science (Concentration)

### Description

The BS in Secondary Education with a concentration in Biology concentration prepares candidates as professional educators to teach biology, anatomy and physiology, and other related sciences in grades 6 - 12. With careful planning, students can complete both this program and a BS in Biological Sciences. This program leads to an ALSDE Class B Teaching Certification in Biology (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

37 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED423 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
      - ED433 - TEACH SC MID & SEC SCHOOL II (2 - 3)
  - Science Courses
    - 33 hours from:
      - BY219 - GENETICS AND EVOLUTION (3)
      - BY221 - GENETICS AND EVOLUTION LAB (1)
      - BY300 - CELL & DEVELOPMENTAL BIOLOGY (4)
      - BY300L - CELL & DEVELOPMENTAL BIO LAB
      - BY312 - PRINCIPLES OF ECOLOGY (4)
      - BY321 - GENERAL MICROBIOLOGY I (4)
      - BY321L - GENERAL MICROBIOLOGY I LAB
      - CH223 - QUANTITATIVE ANALYSIS (3)
      - CH224 - QUANTITATIVE ANALYSIS LAB (1)
      - CH301 - ELEMENTARY BIOCHEMISTRY (3)
      - CH331 - ORGANIC CHEMISTRY I (3)
      - CH332 - ORGANIC CHEMISTRY II (3)
      - CH336 - ORGANIC CHEMISTRY LAB II (1)
      - CH401 - INORGANIC CHEMISTRY (3)

Grand Total Credits: **37**

## Secondary Education (BS) - Secondary Education Chemistry (Concentration)

### Description

The BS in Secondary Education with a concentration in Chemistry prepares candidates as professional educators to teach chemistry, general physical science, and other related sciences in grades 6 – 12. With careful planning, students can complete both this program and a BS in Chemistry. This program leads to an ALSDE Class B Teaching Certification in Chemistry (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

37 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED423 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
      - ED433 - TEACH SC MID & SEC SCHOOL II (2 - 3)
  - Chemistry Courses
    - 33 hours from:
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH223 - QUANTITATIVE ANALYSIS (3)
      - CH224 - QUANTITATIVE ANALYSIS LAB (1)
      - CH331 - ORGANIC CHEMISTRY I (3)
      - CH335 - ORGANIC CHEMISTRY LAB I (1)
      - CH332 - ORGANIC CHEMISTRY II (3)
      - CH336 - ORGANIC CHEMISTRY LAB II (1)
      - CH347 - BIOPHYSICAL CHEMISTRY I (3)
      - CH348 - BIOPHYSICAL CHEMISTRY II (3)
      - CH361 - GENERAL BIOCHEMISTRY (3)
      - CH362 - GENERAL BIOCHEMISTRY LAB (1)
      - CH401 - INORGANIC CHEMISTRY (3)

Grand Total Credits: **37**

## Secondary Education (BS) - Secondary Education English (Concentration)

### Description

The BS in Secondary Education with a concentration in English prepares candidates as professional educators to teach English Language Arts, Drama/Theater, Journalism, and other related sciences in grades 6 – 12. With careful planning, students can complete both this program and a BA in English. This program leads to an ALSDE Class B Teaching Certification in English Language Arts (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

## **Concentration Requirements**

Teaching Field

40 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED421 - SECNDRY ELA INSTR WRIT TO READ (2 - 3)
      - ED431 - SEC ELA METHD: READING TO WRIT (2 - 3)
  - English Courses
    - Complete all of the following
      - 3 hours from:
        - EH207 - READINGS LITERATURE/CULTURE I (3)
        - EH208 - READINGS LITERATURE/CULTURE 2 (3)
        - EH241 - LITERATURE WITHOUT BORDERS (3)
        - EH242 - MYTHOLOGY (3)
        - EH243 - PROTEST LITERATURE (3)
        - EH244 - HEROES &/OR MONSTERS (3)
        - EH245 - LOVE &/OR ROMANCE (3)
        - EH246 - SPECULATIVE REALITIES (3)
      - 12 hours from:
        - EH305 - INTRO TO LITERARY STUDIES (3)
        - EH400 - COMPOSITION STUDIES FOR TCHERS (3)
        - ESL410 - INTRO TO LANGUAGE SYSTEMS (3)
        - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
    - American Literature
      - 3 hours from any EH 300 - 400 level course(s)
    - British Literature
      - 3 hours from any EH 300 - 400 level course(s)
    - Literature Elective
      - Complete all of the following
        - 3 hours from any EH 300 - 400 level course(s)
        - May include ED 413
    - Drama and Theatre
      - Complete all of the following
        - 3 hours from:
          - TH221 - ACTING (3)
        - 3 hours from any TH 300 - 400 level course(s)
    - Journalism
      - Complete all of the following
        - 3 hours from:
          - CM205 - INTRO TO JOURNALISM (3)
        - 3 hours from any CM or FMA 300 - 400 level course(s)

Grand Total Credits: **40**

## **Secondary Education (BS) - Secondary Education Foreign Language (Concentration)**

### **Description**

The BS in Secondary Education with a concentration in Foreign Languages prepares candidates as professional educators to teach either Spanish, French, or German languages in grades 6 – 12. With careful planning, students can complete both this program and a BA in Foreign Languages. This program leads to an ALSDE Class B Teaching Certification in Foreign Languages (Spanish, French, or German) (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

## **Concentration Requirements**

Teaching Field

40 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED425 - METHODS OF TEACHG WORLD LANGUA (2 - 3)
      - ED435 - DIFF INSTR IN WORLD LANGUAGES (2 - 3)
  - World Language Courses
    - Complete all of the following
      - Language Courses
        - Complete 1 of the following
          - French
            - 30 hours from:
              - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
              - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
              - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
              - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
              - WLC301F - CONVERSATION:FRENCH (3)
              - WLC302F - COMPOSITION:FRENCH (3)
              - WLC303F - FOREIGN LANG LIFE & PROF:FRENC (3)
              - WLC304F - CULTURE:FRENCH (3)
              - WLC305F - INTRO TO LITERATURE:FRENCH (3)
              - WLC404F - TEXTS & CONTEXTS:SEM LIT:FRENC (3)
          - German
            - 30 hours from:
              - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
              - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
              - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
              - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
              - WLC301G - CONVERSATION:GERMAN (3)
              - WLC302G - COMPOSITION:GERMAN (3)
              - WLC303G - FOREIGN LANG LIFE & PROF:GERMA (3)
              - WLC304G - CULTURE:GERMAN (3)
              - WLC305G - INTRO TO LITERATURE:GERMAN (3)
              - WLC404G - TEXTS & CONTEXTS:SEM LIT/GERMA (3)
          - Spanish
            - 30 hours from:
              - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
              - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
              - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
              - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
              - WLC301S - CONVERSATION:SPANISH (3)
              - WLC302S - COMPOSITION:SPANISH (3)
              - WLC303S - FOREIGN LANG LIFE & PROF:SPANI (3)
              - WLC304S - CULTURE:SPANISH (3)
              - WLC305S - INTRO TO LITERATURE:SPANISH (3)
              - WLC404S - TEXTS & CONTEXTS:SEM LIT:SPANI (3)
    - Additional Courses
      - 6 hours from:
        - WLC204 - INTERNATIONAL CINEMA (3)
        - WLC410 - INT'L INTERN:COMP LANG/CULT (3 - 6)

Grand Total Credits: **40**

## Secondary Education (BS) - Secondary Education History (Concentration)

### Description

The BS in Secondary Education with a concentration in History prepares candidates as professional educators to teach world and United States history in grades 6 – 12. With careful planning, students can complete both this program and a BA in History. This program leads to an ALSDE Class B Teaching Certification in History (6-12). For further information, please refer to the department web site at

<https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

37 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED424 - TCHNG SOC STUD MID & SEC SCH I (2 - 3)
      - ED434 - TCHG SOC ST MID & SEC SCHLS II (2 - 3)
  - History Courses
    - Complete all of the following
      - 18 hours from:
        - HY104 - WORLD HISTORY SINCE 1500 (3)
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
        - HY300 - CRAFT OF HISTORY (3)
        - HY325 - HISTORY OF ALABAMA (3)
        - HY490 - HISTORY CAPSTONE (3)
      - American History
        - 6 hours from any HY 300 - 400 level course(s)
      - Non-American History
        - 6 hours from any HY 300 - 400 level course(s)
      - History Elective
        - 3 hours from any HY 300 - 400 level course(s)

Grand Total Credits: **37**



## Secondary Education (BS) - Secondary Education History Social Studies (Concentration)

### Description

The BS in Secondary Education with a concentration in History and Social Studies prepares candidates as professional educators to teach all histories, psychology, economics, government, and other related sciences in grades 6 – 12. With careful planning, students can complete both this program and a BA in History. This program leads to an ALSDE Class B Teaching Certification in Social Studies (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

37 Total Credits

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- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED424 - TCHNG SOC STUD MID & SEC SCH I (2 - 3)
      - ED434 - TCHG SOC ST MID & SEC SCHLS II (2 - 3)
  - History Courses
    - Complete all of the following
      - hours from:
        - HY104 - WORLD HISTORY SINCE 1500 (3)
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
        - HY300 - CRAFT OF HISTORY (3)
        - HY325 - HISTORY OF ALABAMA (3)
        - HY490 - HISTORY CAPSTONE (3)
      - American History
        - 6 hours from any HY 300 - 400 level course(s)
      - Non-American History
        - 6 hours from any HY 300 - 400 level course(s)
      - History Elective
        - 3 hours from any HY 300 - 400 level course(s)
  - Social Science Courses
    - Complete all of the following
      - 3 hours from:
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - 15 hours from:
        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)

Grand Total Credits: **37**

## Secondary Education (BS) - Secondary Education Math (Concentration)

### Description

The BS in Secondary Education with a concentration in Mathematics prepares candidates as professional educators to teach mathematics and other related sciences in grades 6 – 12. With careful planning, students can complete both this program and a BS in Mathematics. This program leads to an ALSDE Class B Teaching Certification in Mathematics (6-12). For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

42 Total Credits

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- Complete all of the following
  - Teaching Field
    - 4 hours from:
      - ED422 - MIDDLE & SECD SCH MATH METHODS (2 - 3)
      - ED432 - TCH REASON/PROOF SEC MATH (2 - 3)
  - Mathematics Courses
    - Complete all of the following
      - 32 hours from:
        - MA172 - CALCULUS II (4)
        - MA201 - CALCULUS III (4)
        - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
        - MA244 - INTRO TO LINEAR ALGEBRA (3)
        - MA330 - FOUNDATIONS OF MATH (3)
        - MA385 - INTRO TO PROBABILITY & STATIST (3)
        - MA433 - INTRODUCTION TO GEOMETRY (3)
        - MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
        - MA452 - INTRO TO REAL ANALYSIS (3)
        - MA487 - INTRO TO MATH STATISTICS (3)
      - 6 hours from any MA 300 - 400 level course(s)

Grand Total Credits: **42**

## Secondary Education (BS) - Secondary Education Physics (Concentration)

### Description

The BS in Secondary Education with a concentration in Physics prepares candidates as professional educators to teach physics, physical science, and other related sciences in grades 6 – 12. With careful planning, students can complete both this program and a BS in Physics. This program leads to an ALSDE Class B Teaching Certification in Physics (6-12). For further information, please refer to the department web site at

<https://www.uah.edu/education/departments/curriculum-and-instruction/undergraduate-programs>

### Concentration Requirements

Teaching Field

39 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Education Courses
    - 4 hours from:
      - ED423 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
      - ED433 - TEACH SC MID & SEC SCHOOL II (2 - 3)
  - Physics Courses
    - Complete all of the following
      - 28 hours from:
        - PH110 - FRONTIERS IN SCIENCE (3)
        - PH111 - GEN PHYSICS W/CALCULUS I (3)
        - PH114 - GENERAL PHYSICS LAB I (1)
        - PH112 - GEN PHYSICS W/CALC II (3)
        - PH115 - GENERAL PHYSICS LAB II (1)
        - PH113 - GEN PHYSICS W/CALC III (3)
        - PH116 - GENERAL PHYSICS LAB III (1)
        - PH251 - SPECIAL RELATIVITY (1)
        - PH301 - INTERMEDIATE MECHANICS (3)
        - PH305 - MATH METHODS IN PHYSICS (3)
        - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
        - PH499 - PHYSICS PRACTICUM (3)
      - 7 hours from any AST, PH, or OPT 300 - 400 level course(s)

Grand Total Credits: **39**

## **Secondary Education (MAT) (Fully Online)**

### **Program Description**

The MAT in Secondary Education prepares individuals who have completed a non-education baccalaureate degree from a regionally accredited institution within one of the listed content areas for careers in education. The program is approved by Council for the Accreditation of Educator Preparation (CAEP) and the Alabama State Department of Education (ALSDE) to lead to a Class A teaching certificate. The program leads to an ALSDE Class Alternative A Certificate (6-12) within the content area. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

43

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.
- Graduate School Masters Requirements
  - Complete all of the following
    - Master's Transfer Credits
      - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
    - Complete 1 of the following
      - Non-Thesis
        - 30 semester hours of graduate coursework.
      - Thesis
        - Complete all of the following
          - 24 semester hours of graduate course work
          - 6 credit hours of thesis coursework (699)
          - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
          - A thesis approved by the supervisory committee.

## Secondary Education (MAT) (Fully Online) - Biological Science (Concentration)

### Description

The MAT in Secondary Education with a concentration in Biological Science prepares individuals with an academic background in biology who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (6-12) in Biology. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Education Requirements

28 Total Credits

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- Complete all of the following
  - 25 hours from:
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED523 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
    - ED533 - TEACH SC MID & SEC SCHOOL II (2 - 3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - Internship
    - Complete all of the following
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Content Courses

15 Total Credits

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- 15 hours from any BYS 500 - 700 level course(s)

Grand Total Credits: **43**

## Secondary Education (MAT) (Fully Online) - Chemistry (Concentration)

### Description

The MAT in Secondary Education with a concentration in Chemistry prepares individuals with an academic background in chemistry or related field who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (6-12) in Chemistry. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Education Requirements

28 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 25 hours from:
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED523 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
    - ED533 - TEACH SC MID & SEC SCHOOL II (2 - 3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - Internship
    - Complete all of the following
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Content Courses

15 Total Credits

*keyboard\_arrow\_up*

- 15 hours from any CH 500 - 700 level course(s)

Grand Total Credits: **43**

## Secondary Education (MAT) (Fully Online) - English (Concentration)

### Description

The MAT in Secondary Education with a concentration in English prepares individuals with an academic background in English Language Arts or related field who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (6-12) in English Language Arts. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Education Requirements

28 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 25 hours from:
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED521 - SECNDRY ELA INSTR WRIT TO READ (2 - 3)
    - ED531 - SEC ELA METHDS READING (2 - 3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - Internship
    - Complete all of the following
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Content Courses

15 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least 1 of the following:
    - EH500 - COMPOSITION STUDIES TCHRS (3)
    - EH601 - ACTION RESCH WRITING STUDIES (3)
  - Earned at least 1 of the following:
    - ESL510 - INTRO TO LANGUAGE SYSTEMS (3)
    - ESL520 - INSTR & ACADEMIC LANG CONT DOM (3)
  - 9 hours from any EH 500 - 600 level course(s)

Grand Total Credits: **43**

## Secondary Education (MAT) (Fully Online) - English Speakers of Other Languages (Concentration)

### Description

The MAT in Secondary Education with an English Speakers of Other Languages (ESOL) concentration prepares individuals with an academic background in a related background who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (P-12) in ESOL. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Program Requirements

45 - 48 Total Credits

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- Complete all of the following
  - Complete
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - EDC511 - INSTRUCTIONAL STRATEGIES (3)
    - ED575 - READING PRIMARY GRADES (3)
    - ED672 - TCHG ELEM SOCIAL STUDIES (3)
    - ED673 - TCHG NATURAL/HLTH SCIENCE (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
    - ESL640 - INSTRUCT/EVAL LANG USAGE (3)
    - ESL500 - POLICY & PRACTICE IN EDUC LING (3)
    - ESL520 - INSTR & ACADEMIC LANG CONT DOM (3)
    - ESL510 - INTRO TO LANGUAGE SYSTEMS (3)
  - Internship
    - Complete all of the following
      - Complete
        - ED696 - P-12 INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Grand Total Credits: **45 - 48**



## Secondary Education (MAT) (Fully Online) - History (Concentration)

### Description

The MAT in Secondary Education with a concentration in History prepares individuals with an academic background in history or related field who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (6-12) in History. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Education Requirements

28 Total Credits

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- Complete all of the following
  - 25 hours from:
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED524 - TCHNG SOC STUD MID & SEC SCH I (2 - 3)
    - ED534 - TEACH SOC ST MID & SEC SCHL II (2 - 3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - Internship
    - Complete all of the following
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Content Courses

15 Total Credits

*keyboard\_arrow\_up*

- 15 hours from any HY 500 - 600 level course(s)

Grand Total Credits: **43**

## Secondary Education (MAT) (Fully Online) - Mathematics (Concentration)

### Description

The MAT in Secondary Education with a concentration in Mathematics prepares individuals with an academic background in mathematics or related field who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (6-12) in Mathematics. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Education Requirements

28 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 25 hours from:
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED522 - MIDDLE & SECD SCH MATH METHODS (2 - 3)
    - ED539 - TCH REASON/PROOF SEC MATH (2 - 3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - Internship
    - Complete all of the following
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Content Courses

15 Total Credits

*keyboard\_arrow\_up*

- 15 hours from any MA 500 - 700 level course(s)

Grand Total Credits: **43**

## Secondary Education (MAT) (Fully Online) - Physics (Concentration)

### Description

The MAT in Secondary Education with a concentration in Physics prepares individuals with an academic background in physics or related area who want to change careers to become a professional educator. The program leads to an ALSDE Class Alternative A Certification (6-12) in Physics. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>

### Concentration Requirements

Education Requirements

28 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 25 hours from:
    - ED501 - INTRO TO EDUCATION
    - ED604 - CONTRIBUTION PSY TO EDUC (3)
    - ED609 - CLASSROOM & BEHAVIOR MGMT (3)
    - ED523 - TCHNG SCIENCE MID & SEC SCH I (2 - 3)
    - ED533 - TEACH SC MID & SEC SCHOOL II (2 - 3)
    - ED530 - APPLIED MULTICULTURALISM (3)
    - ED608 - EXPAND RDG ABIL CONT AREA INST (3)
    - ED520 - COMPUTER BASED INSTRUCT'L TECH (3)
    - ED607 - EDU LEADER AS EVALUATOR (3)
    - ED593 - ED EXCEPT CHILD & YOUTH (3)
  - Internship
    - Complete all of the following
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students are required to complete 200 hours of field experiences throughout the program before their internship.

Content Courses

15 Total Credits

*keyboard\_arrow\_up*

- 15 hours from any PH 500 - 700 level course(s)

Grand Total Credits: **43**

## Sport & Fitness Management (BS)

### Program Description

The BS in Sports and Fitness Management program prepares students for both graduate studies and entry into management, marketing, and administrative positions in educational and sport business settings. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/kinesiology>

### Number of Credit Hours

121

## **Degree Requirements**

### Degree Requirements

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- Degree Requirements (Education: Kinesiology)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARS160 - DRAWING: FOUNDATIONS (3)
        - MU100 - INTRO TO MUSIC LITERATURE (3)
        - TH122 - THEATRE APPRECIATION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
      - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 201
    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)
    - WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
    - WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
    - WLC201S - INTERM FOREIGN LANG:SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 202
    - WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
    - WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
    - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
    - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
    - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
    - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)

- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
  - WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
  - WLC202J - INTERM FORGN LANG II:JAPANESE (3)
  - WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
  - WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- Sport & Fitness Management Students must choose CM 113 to satisfy Area II: Humanities and Fine Arts in Charger Foundations.

### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following

- 3 hours from:

*keyboard\_arrow\_up*

#### Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
    - MA107 - ALGEBRA WITH APPLICATIONS (3)
    - MA110 - FINITE MATHEMATICS (3)
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA181 - INTRODUCTION TO STATISTICS (3)
    - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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#### Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
    - AST106 - EXPLORING THE COSMOS I (4)
    - AST107 - EXPLORING THE COSMOS II (4)
    - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH121M - GENERAL CHEMISTRY I M (3)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
    - PH100 - CONCEPTUAL PHYSICS (4)
    - PH101 - GENERAL PHYSICS I (4)
    - PH102 - GENERAL PHYSICS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES104 - WEATHER & CLIMATE CHANGE (4)

### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)
          - HY104 - WORLD HISTORY SINCE 1500 (3)
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences -US
          - HY221 - UNITED STATES TO 1877 (3)
          - HY222 - UNITED STATES SINCE 1877 (3)
      - 9 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)
          - HY104 - WORLD HISTORY SINCE 1500 (3)
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences -US
          - HY221 - UNITED STATES TO 1877 (3)
          - HY222 - UNITED STATES SINCE 1877 (3)
        - keyboard\_arrow\_up*
        - Area IV - History, Social and Behavioral Sciences - SBS
          - AES105 - WORLD REGIONAL GEOGRAPHY (3)
          - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
          - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
          - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
          - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
          - PSC260 - INTRO INTERNTL RELATIONS (3)
          - PY101 - GENERAL PSYCHOLOGY I (3)
          - PY201 - LIFE-SPAN DEVELOPMENT (3)
          - SOC100 - INTRO TO SOCIOLOGY (3)
          - SOC103 - INTRO TO CRIMINOLOGY (3)
          - ECN142 - PRINC OF MACROECONOMICS (3)
          - ECN143 - PRINC OF MICROECONOMICS (3)
    - Sport & Fitness Management Students must choose SOC 100 to satisfy Area IV: Social and Behavioral Sciences in Charger Foundations.

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

13 Total Credits

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- 13 hours from:
  - FYE101D - CHARGER SUCCESS - EDUCATION (1)
  - CM310 - PERSUASION (3)
  - CM313 - BUSINESS & PROFESSIONAL COMM (3)
  - MGT301 - MANAGING ORGANIZATIONS (3)
  - MKT301 - PRINCIPLES OF MARKETING (3)

Grand Total Credits: **13**



## **Major Requirements**

Major Requirements

39 Total Credits

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- 39 hours from:
  - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
  - SFM265 - INTRO TO SPORT MGMT (3)
  - SFM381 - FACILITIES AND EQUIPMENT MGT (3)
  - SFM382 - SPORT LEADERSHIP (3)
  - SFM442 - INTRO TO SPORT LAW (3)
  - SFM470 - SPORT MARKETING (3)
  - SFM472 - ETHICS IN SPORT (3)
  - SFM473 - ADV SPORT MGMT (3)
  - SFM491 - SPORT & FITNESS MGT INTERNSHIP (6)
  - SFM374 - ORG ISSUES IN SPORT (3)
  - SFM474 - GOV & POL DEV IN SPORT (3)
  - SFM484 - EVENT MANAGEMENT (3)

Electives

0 Total Credits

*keyboard\_arrow\_up*

- Earned at least this many total credits: 6

Grand Total Credits: **39**

## **4-Year Plan**

Year 1

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - CM113 - PUBLIC SPEAKING (3)
    - SOC100 - INTRO TO SOCIOLOGY (3)
  - Earned at least 1 of the following:
    - FYE101D - CHARGER SUCCESS - EDUCATION (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 Hours Mathematics
  - 3 Hours Fine Art

Spring

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- Complete all of the following
  - 6 hours from:
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - KIN260 - FOUNDATIONS OF KINESIOLOGY (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 4 Hours Lab Science
  - 3 Hours History

Year 2

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - CM220 - INTRO PUBLIC RELATIONS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)
    - SFM265 - INTRO TO SPORT MGMT (3)
    - SFM383 - SOCIOLOGY IN SPORT (3)
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 12 hours from:
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
    - SFM382 - SPORT LEADERSHIP (3)
    - SFM385 - WOMEN IN SPORT (3)
  - 4 Hours Lab Science

Year 3

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No Rules

Fall

*keyboard\_arrow\_up*

- 15 hours from:
  - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - MSC287 - BUSINESS STATISTICS I (3)
  - SFM381 - FACILITIES AND EQUIPMENT MGT (3)
  - SFM442 - INTRO TO SPORT LAW (3)
  - SFM470 - SPORT MARKETING (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
    - SFM484 - EVENT MANAGEMENT (3)
    - SFM472 - ETHICS IN SPORT (3)
  - 3 Hours Humanities, 2nd Literature, or 2nd Fine Art

Year 4

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No Rules

Fall

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- Complete all of the following
  - 6 hours from:
    - ECN406 - SPORTS ECONOMICS (3)
    - SFM473 - ADV SPORT MGMT (3)
  - 3 hours from:
    - KIN361 - TEACHING TEAM SPORTS (3)
    - KIN362 - TEACHING INDIVIDUAL ACTIVITIES (3)
    - KIN345 - PRINCIPLES OF COACHING (3)

- SFM343 - ST SPORTS & FITNESS MGMT (3)
- 3 Hours 2nd History or 2nd Social & Behavioral Science
- 3 Hours General Elective (Approved by Advisor)

Spring

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- Complete all of the following
  - 6 hours from:
    - SFM491 - SPORT & FITNESS MGT INTERNSHIP (6)
  - 3 hours from:
    - CM205 - INTRO TO JOURNALISM (3)
    - CM310 - PERSUASION (3)
    - CM313 - BUSINESS & PROFESSIONAL COMM (3)
    - CM331 - COMMUNICATION THEORY (3)
    - CM405 - ADVANCED MEDIA WRITING (3)
    - CM430 - MASS MEDIA IN AMERICA (3)
    - CM444 - ADVERTISING (3)
  - 3 Hours General Elective (Approved by Advisor)

## **Sport & Fitness Management (BS) - Sport and Fitness Business (Concentration)**

### **Description**

#### **Program Objectives:**

##### **SFM MISSION STATEMENT**

The Sport & Fitness Management program at The University of Alabama in Huntsville develops future leaders in the sport and fitness industries by teaching students fundamental theories utilizing a global lens and providing practical hands-on applications through community engagement, practicum experiences, and internship.

##### **SFM VISION STATEMENT**

The Sport & Fitness Management program aims to become a benchmark for preparing students to apply critical thinking skills through unique perspectives and drive progress as leaders in the global sport and fitness industries.

##### **SFM Program Learning Goals**

The SFM program learning goals aim to have a positive impact on the lives and experiences of its students through:

- Developing future leaders within the field by allowing students to develop and implement activities that positively influence the program, campus, and surrounding community
- Interpreting fundamental theories in sport and fitness management to capture a comprehensive overview of the field
- Applying a global lens and critical thinking skills to solve problems and create change within sport and fitness.
- Bridging theories to practice through hands-on application opportunities such as community engagement, practicum experiences, and internship
- Enhancing communication skills for the purpose of creating diverse and inclusive collaborations both locally and globally
- Utilizing technology, materials, and resources to analyze metrics and how they can impact performance.

### **Concentration Requirements**

- 21 hours from:
  - CM220 - INTRO PUBLIC RELATIONS (3)
  - CM231 - FOUNDATIONS OF HUMAN COMMUNICA (3)
  - SFM343 - ST SPORTS & FITNESS MGMT (3)
  - SFM390 - SPORT COMMUNICATION (3)
  - SFM471 - SPORT FINANCE (3)
  - SFM480 - SPORT ANALYTICS (3)
  - SFM481 - SPRT SALES/REV/FUND (3)

Grand Total Credits: **21**

## **Sport & Fitness Management (BS) - Sport Coaching and Leadership (Concentration)**

## **Description**

### **Program Objectives:**

#### **SFM MISSION STATEMENT**

The Sport & Fitness Management program at The University of Alabama in Huntsville develops future leaders in the sport and fitness industries by teaching students fundamental theories utilizing a global lens and providing practical hands-on applications through community engagement, practicum experiences, and internship.

#### **SFM VISION STATEMENT**

The Sport & Fitness Management program aims to become a benchmark for preparing students to apply critical thinking skills through unique perspectives and drive progress as leaders in the global sport and fitness industries.

#### **SFM Program Learning Goals**

The SFM program learning goals aim to have a positive impact on the lives and experiences of its students through:

- Developing future leaders within the field by allowing students to develop and implement activities that positively influence the program, campus, and surrounding community
- Interpreting fundamental theories in sport and fitness management to capture a comprehensive overview of the field
- Applying a global lens and critical thinking skills to solve problems and create change within sport and fitness.
- Bridging theories to practice through hands-on application opportunities such as community engagement, practicum experiences, and internship
- Enhancing communication skills for the purpose of creating diverse and inclusive collaborations both locally and globally
- Utilizing technology, materials, and resources to analyze metrics and how they can impact performance.

## **Concentration Requirements**

- Complete all of the following
  - 18 hours from:
    - SFM383 - SOCIOLOGY IN SPORT (3)
    - SFM387 - IMPACT OF TECH IN SPORT (3)
    - KIN210 - ATHLC INJURY PREVENTION & CARE (3)
    - KIN345 - PRINCIPLES OF COACHING (3)
    - KIN455 - MOTOR LEARNING (3)
    - KIN463 - PSYCHOLOGICAL ASPECTS SPORT (3)
  - 3 hours from:
    - KIN361 - TEACHING TEAM SPORTS (3)
    - KIN463 - PSYCHOLOGICAL ASPECTS SPORT (3)

Grand Total Credits: **21**

## **4-Year Plan**

- Rule Not Selected

## Teaching English as a Second Language (Graduate Certificate)

### Program Description

The graduate certificate in Teaching English to Speakers of Other Languages (TESOL) combines foundational courses that ground you in the components and analysis of human languages with advanced courses that prepare students to design and deliver instruction across a range of settings. Additional field courses allow students to tailor their program to their unique goals in working with nonnative speakers of English in the States or abroad. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/graduate-certificate-in-tesol>

### Number of Credit Hours

18

### Major Requirements

Core Courses  
12 Total Credits  
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- 12 hours from:
  - ESL510 - INTRO TO LANGUAGE SYSTEMS (3)
  - ESL520 - INSTR & ACADEMIC LANG CONT DOM (3)
  - ESL640 - INSTRUCT/EVAL LANG USAGE (3)
  - ESL650 - PRACTICUM, TESOL (3)

Allied Field Courses  
6 Total Credits  
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- Complete all of the following
  - 6 hours from any CM, ED, EDC, ECH, ESL, or EH 500 - 600 level course(s)
  - Two allied field courses, often chosen from Communication Arts, Curriculum and Instruction, or English, focus on tailoring the program to the students' unique goals.

Grand Total Credits: **18**

## College of Engineering

### Aerospace Engineering (BSAE)

### Program Description

The BSAE in Aerospace Engineering prepares students for careers in a diverse and rapidly changing field that consists of four fundamental technical disciplines: aerodynamics, structures and materials, propulsion, and flight mechanics and control. This program prepares students to design and develop high performance flight systems such as aircraft, rotorcraft, spacecraft, missiles and rockets. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/mae>.

### Number of Credit Hours

128

## **Degree Requirements**

### Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Literature
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)



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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area IV - History, Social and Behavioral Sciences - SBS
        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
        - PY101 - GENERAL PSYCHOLOGY I (3)
        - PY201 - LIFE-SPAN DEVELOPMENT (3)
        - SOC100 - INTRO TO SOCIOLOGY (3)
        - SOC103 - INTRO TO CRIMINOLOGY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
      - 3 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

21 Total Credits

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- Complete all of the following
  - 18 hours from:
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

Science Elective

- Complete 1 of the following
  - Earned at least 1 of the following:
    - CH123 - GENERAL CHEMISTRY II (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - Any 300 or 400 level Mathematics Course

Grand Total Credits: **21**

### **Major Requirements**

Engineering

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR299 - ENGINEERING MENTORING I
  - EGR399 - ENGINEERING MENTORING II

Aerospace Engineering

61 Total Credits

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- Complete all of the following
  - 40 hours from:

- MAE200 - PRINC AERONAUTICS & ASTRONAUTI (3)
- MAE211 - INTRO COMPUTATIONAL TOOLS (2)
- EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
- MAE271 - STATICS (3)
- MAE272 - DYNAMICS (3)
- MAE284 - NUMERICAL METHODS (3)
- MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
- ISE321 - ENGINEERING ECONOMY (3)
- MAE330 - FUNDAMENTALS AERODYNAMICS (3)
- MAE331 - AERODYNAMICS LAB (1)
- MAE341 - THERMODYNAMICS I (3)
- MAE343 - COMPRESSIBLE AERODYNAMICS (3)
- MAE370 - MECHANICS OF MATERIALS (3)
- MAE371 - AEROSPACE STRUCTURES (3)
- MAE375 - MECHANICS OF MATERIALS LAB (1)
- 3 hours from:
  - MAE440 - ROCKET PROPULSION I (3)
  - MAE441 - AIRBREATHING PROPULSION (3)
- 18 hours from:
  - MAE468 - ELEMENTS OF SPACECRAFT DESIGN (3)
  - MAE471 - ADV AEROSPACE STR & MTRLs (3)
  - MAE480 - AIRCRAFT STABILITY & CONTROL (3)
  - MAE488 - ANALY ENGINEERING SYSTEM (3)
  - MAE490 - SENIOR DESIGN I (3)
  - MAE491 - SENIOR DESIGN II (3)

#### Technical Electives

6 Total Credits

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- Complete all of the following
  - AE students may not take both MA 385 AND ISE 390 for Technical Elective credit. AE students may not take MAE 310 for credit.
  - 6 hours from:
    - AST371 - INTRO TO ASTROPHYSICS (3)
    - CH331 - ORGANIC CHEMISTRY I (3)
    - CH332R - ORGANIC CHEM II RECITATION
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CE321 - INTRO TO TRANSPORTATION ENG (3)
    - CE372 - SOIL MECHANICS & FOUNDATION (3)
    - CE380 - CIVIL ENGINEERING MATERIALS (3)
    - CE380 - CIVIL ENGINEERING MATERIALS (3)
    - CE381 - STRUCTURAL ANALYSIS I (3)
    - CE422 - TRAFFIC ENGINEERING DESIGN (3)
    - CE441 - HYDRAULIC ENGINEERING DESIGN (3)
    - CE449 - INTRO ENVIRONMENTAL ENGR (3)
    - CE456 - WATER QUALITY CONTROL PROC (3)
    - CE457 - HYDROLOGY (3)
    - CE481 - STRUCTURAL ANALYSIS II (3)
    - CE484 - STEEL DESIGN (3)
    - EE307 - ELECTRICITY & MAGNETISM (3)
    - EE308 - ELECTROMAGNETIC ENGR (3)
    - EE310 - SOLID STATE FUNDAMENTALS (3)
    - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)
    - EE382 - ANALY METH CONTINUOUS TIME SYS (3)
    - EE383 - ANALY METH MULTIVARIABLE (3)
    - EE385 - RANDOM SIGNALS & NOISE (3)
    - EE386 - INTRO CONTROL/ROBOTIC SYS (3)
    - ISE327 - MANAGEMENT SYSTEMS ANALYSIS (3)
    - ISE328 - INTRO SYSTEMS ENGINEERING (3)
    - ISE340 - OPERATIONS RESEARCH (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)

- ISE391 - PROB/ENGR STAT II (3)
- MA301 - INTRO ELEMENTARY NUMBER THEORY (3)
- MA330 - FOUNDATIONS OF MATH (3)
- MA385 - INTRO TO PROBABILITY & STATIST (3)
- MA420 - INTERM DIFFERENTIAL EQUATIONS (3)
- MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
- MA452 - INTRO TO REAL ANALYSIS (3)
- MA453 - INTRO TO COMPLEX ANALYSIS (3)
- MA456 - METHODS OF PARTIAL DIFF EQUA (3)
- MA458 - APPLIED LINEAR ALGEBRA (3)
- MA460 - INTRO FOURIER ANALYSIS (3)
- MA465 - INTRO TO MATH MODELING (3)
- MA487 - INTRO TO MATH STATISTICS (3)
- PH301 - INTERMEDIATE MECHANICS (3)

Grand Total Credits: **71**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earned at least 1 of the following:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Year 2

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Fall

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- 16 hours from:
  - MA201 - CALCULUS III (4)

- MA244 - INTRO TO LINEAR ALGEBRA (3)
- MAE211 - INTRO COMPUTATIONAL TOOLS (2)
- MAE271 - STATICS (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH115 - GENERAL PHYSICS LAB II (1)
- EGR299 - ENGINEERING MENTORING I

Spring

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- 16 hours from:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MAE272 - DYNAMICS (3)
  - MAE370 - MECHANICS OF MATERIALS (3)
  - MAE375 - MECHANICS OF MATERIALS LAB (1)
  - MAE284 - NUMERICAL METHODS (3)
  - MAE284L - NUMERICAL METHODS LAB
  - MAE200 - PRINC AERONAUTICS & ASTRONAUTI (3)

Year 3

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Fall

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- Complete all of the following
  - 13 hours from:
    - MAE341 - THERMODYNAMICS I (3)
    - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
    - MAE330 - FUNDAMENTALS AERODYNAMICS (3)
    - MAE331 - AERODYNAMICS LAB (1)
    - MAE371 - AEROSPACE STRUCTURES (3)
    - EGR399 - ENGINEERING MENTORING II
  - 3 Hours Science Elective

Spring

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- Complete all of the following
  - 12 hours from:
    - ISE321 - ENGINEERING ECONOMY (3)
    - MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
    - MAE311L - PRINC MEASUREMENT & INSTR LAB
    - MAE488 - ANALY ENGINEERING SYSTEM (3)
    - MAE343 - COMPRESSIBLE AERODYNAMICS (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Year 4

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Fall

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- Complete all of the following
  - 6 hours from:
    - MAE490 - SENIOR DESIGN I (3)
    - MAE480 - AIRCRAFT STABILITY & CONTROL (3)
  - 3 hours from:
    - MAE440 - ROCKET PROPULSION I (3)

- MAE441 - AIRBREATHING PROPULSION (3)
- 3 Hours Technical Elective
- 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 9 hours from:
    - MAE468 - ELEMENTS OF SPACECRAFT DESIGN (3)
    - MAE471 - ADV AEROSPACE STR & MTRLs (3)
    - MAE491 - SENIOR DESIGN II (3)
  - 3 Hours Technical Elective
  - 3 Hours Area II or IV Charger Foundations Course

## **Aerospace Engineering (BSAE) - JUMP: BSAE, Aerospace Systems Engineering (MS)**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) from a BSAE in Aerospace Engineering to an MS in Aerospace Systems Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Aerospace Systems Engineering (MS)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_AE@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Aerospace@uah.edu

### **JUMP Admission Requirements**

- Minimum GPA of 3.25 for all attempts of MAE 272, MAE 284, MAE 310, MAE 341, and MAE 370.

## **Aerospace Engineering (BSAE) - JUMP: BSAE, Mechanical Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSAE in Aerospace Engineering to an MSE in Mechanical Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Mechanical Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_AE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Mechanical@uah.edu

### **JUMP Admission Requirements**

- Minimum GPA of 3.25 for all attempts of MAE 272, MAE 284, MAE 310, MAE 341, and MAE 370

## **Aerospace Systems Engineering (MS)**



## **Program Description**

The MS in Aerospace Systems Engineering prepares students for doctoral study or industrial positions specializing in research, project management and product innovation in aerospace engineering. The program stresses a sound foundation in technical fundamentals, communication and professionalism. Students pursuing a master's degree gain additional skills and knowledge to advance their career. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/mae>.

## **Number of Credit Hours**

30

## **Degree Requirements**

- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
    - Master's Transfer Credits
      - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
    - Complete 1 of the following
      - Non-Thesis
        - 30 semester hours of graduate coursework.
      - Thesis
        - Complete all of the following
          - 24 semester hours of graduate course work
          - 6 credit hours of thesis coursework (699)
          - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
          - A thesis approved by the supervisory committee.
- ### Engineering Graduate Degree Requirements
- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
  - With prior approval, up to nine semester hours of 500-level courses may be taken in fulfillment of the basic and specific program requirements.

## **Major Requirements**

Engineering Major

12 Total Credits

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- 12 hours from the following:  
graduate courses including supporting engineering courses.

First Minor

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - ISE627 - ENGINEERING SYSTEMS (3)
  - 3 hours from the following:  
graduate course in an approved engineering area of specialization.

Second Minor

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - MAE692 - GRAD ENGR ANALYSIS I (3)
  - 3 hours from:
    - MAE623 - COMPUTATIONAL FLUID DYNAMICS I (3)
    - MAE671 - CONTINUUM MECHANICS (3)
    - MAE674 - FINITE ELEMENT ANALYSIS I (3)
    - MAE693 - GRAD ENGR ANALYSIS II (3)
    - MAE780 - THEORY OF ACOUSTICS (3)
    - ISE690 - STATISTICAL METHODS FOR ENGR (3)

Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - MAE699 - MASTER'S THESIS (0 - 9)
  - Plan II: Non-Thesis
    - 6 hours from the following:  
graduate courses to complete an approved extended program of study

Grand Total Credits: **30**

## **Aerospace Systems Engineering (PhD)**

### **Program Description**

The PhD in Aerospace Engineering produces graduates that can become leaders in the aerospace design field. This advanced degree is one of the highest academic achievements one can get and a great choice for anyone with a deep interest in aircraft and spacecraft design, dynamics, and development. For students interested in research and development, having a PhD gives them a great advantage for a leadership position in R&D. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/mae>.

### **Number of Credit Hours**

## **Degree Requirements**

- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### **Graduate School PhD Requirements**

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

### **Engineering Graduate Degree Requirements**

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
- With prior approval, up to nine semester hours of 500-level courses may be taken in fulfillment of the basic and specific program requirements.

## **Major Requirements**

Engineering Major

27 Total Credits

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- Complete all of the following
  - 27 hours from the following:
    - graduate coursework from MAE or related departments
  - With approval, six (6) of Master's Thesis (MAE 699) may be counted towards this total.

First Minor

12 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ISE627 - ENGINEERING SYSTEMS (3)
  - 9 hours from the following:
    - graduate courses in an approved engineering area of specialization.

Second Minor

9 Total Credits

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- Complete all of the following
  - 3 hours from:
    - MAE692 - GRAD ENGR ANALYSIS I (3)
  - 6 hours from:
    - MAE623 - COMPUTATIONAL FLUID DYNAMICS I (3)
    - MAE671 - CONTINUUM MECHANICS (3)
    - MAE674 - FINITE ELEMENT ANALYSIS I (3)
    - MAE693 - GRAD ENGR ANALYSIS II (3)
    - MAE780 - THEORY OF ACOUSTICS (3)
    - ISE690 - STATISTICAL METHODS FOR ENGR (3)

Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - MAE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **Chemical Engineering (BSCheE)**

### **Program Description**

The BSChEE in Chemical Engineering prepares student to deal with any situation in which changes in the chemical composition or the physical state of matter (or both) are involved and, hence, finds unusually wide application. Heat and mass transfer, fluid mechanics, thermodynamics, chemical reaction kinetics, and process control constitute the heart of chemical engineering. This program has two concentrations; Biotechnology or Materials. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cme>.

### **Number of Credit Hours**

## **Degree Requirements**

### Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
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  - Area II: Humanities and Fine Arts - Literature
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
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  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)
      - keyboard\_arrow\_up*
      - Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:
      - keyboard\_arrow\_up*
      - Area IV - History, Social and Behavioral Sciences - SBS
        - AES105 - WORLD REGIONAL GEOGRAPHY (3)
        - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
        - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
        - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
        - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
        - PSC260 - INTRO INTERNTL RELATIONS (3)
        - PY101 - GENERAL PSYCHOLOGY I (3)
        - PY201 - LIFE-SPAN DEVELOPMENT (3)
        - SOC100 - INTRO TO SOCIOLOGY (3)
        - SOC103 - INTRO TO CRIMINOLOGY (3)
        - ECN142 - PRINC OF MACROECONOMICS (3)
        - ECN143 - PRINC OF MICROECONOMICS (3)
      - 3 hours from:
        - keyboard\_arrow\_up*
        - Area IV: History, Social and Behavioral Sciences - World
          - HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Basic Sciences

32 Total Credits

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- 32 hours from:
  - MA172 - CALCULUS II (4)
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - CH332 - ORGANIC CHEMISTRY II (3)
  - BYS311 - INTRO MOLECULAR UNDST BIO SYST (3)
  - CH351 - PHYS CHEM IN PRACTICE (3)

Grand Total Credits: **32**



## **Major Requirements**

### Engineering

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR299 - ENGINEERING MENTORING I
  - EGR399 - ENGINEERING MENTORING II

### Chemical Engineering

46 Total Credits

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- 46 hours from:
  - CHE201 - INTRO CHEMICAL ENGR PROCESS (2)
  - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)
  - MAE271 - STATICS (3)
  - CHE294 - NATURE & PROPERTIES OF MATLS (3)
  - CHE295 - NATURE & PROPERTIES MATLS LAB (1)
  - CHE342 - TRANSPORT PHENOMENA (3)
  - CHE344 - CHEM ENGR THERMODYNAMICS (3)
  - MAE310 - FLUID MECHANICS I (3)
  - CHE347 - QUANTITATIVE MODELING FOR CHE (3)
  - CHE439 - UNIT OPERATIONS I (2)
  - CHE440 - UNIT OPERATIONS II (2)
  - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)
  - CHE443 - TRANSPORT PROCESSES (3)
  - CHE445 - CHEMICAL PROCESS CONTROL (3)
  - CHE446 - ANAL & DESIGN TRANSPORT EQUIP (3)
  - CHE448 - CHEMICAL ENGINEERING DESIGN (3)
  - CHE485 - PROCESS SAFETY & TOXICOLOGY (3)

### Chemical Engineering Electives

9 Total Credits

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- Complete 1 of the following
  - 9 hours from:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CHE460 - INTRO TO BIOPROCESS ENGR (3)
    - CHE461 - BIOSEPARATIONS (3)
  - 9 hours from:
    - CH440 - POLYMER SYNTHESIS & CHARACTERI (3)
    - CHE494 - APPLIED MATERIALS ENGINEERING (3)
    - CHE495 - POLYMER ENGINEERING (3)

### Technical Electives

3 Total Credits

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- 3 hours from the following:  
EE 213 ISE 390 CE 456 Course Approved by Department

Grand Total Credits: **62**

## **4-Year Plan**

### Year 1

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-

Fall

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- Complete all of the following
  - 11 hours from:
    - MA171 - CALCULUS I (4)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
  - Earned at least 1 of the following:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Area II or IV Charger Foundations Course

Year 2

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 14 hours from:
    - EGR299 - ENGINEERING MENTORING I
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - CHE201 - INTRO CHEMICAL ENGR PROCESS (2)
    - CH331 - ORGANIC CHEMISTRY I (3)
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - 3 Hours Area II or IV Charger Foundations Course

Spring

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- 15 hours from:
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - CH351 - PHYS CHEM IN PRACTICE (3)
  - CHE244 - INTRO TO CHEM ENGRG SYSTEMS (3)
  - CH332 - ORGANIC CHEMISTRY II (3)
  - BYS311 - INTRO MOLECULAR UNDSST BIO SYST (3)

Year 3

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Fall

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- Complete all of the following
  - 13 hours from:
    - MAE271 - STATICS (3)
    - EGR399 - ENGINEERING MENTORING II
    - CHE347 - QUANTITATIVE MODELING FOR CHE (3)
    - CHE344 - CHEM ENGR THERMODYNAMICS (3)
    - CHE294 - NATURE & PROPERTIES OF MATLS (3)
    - CHE295 - NATURE & PROPERTIES MATLS LAB (1)
  - 3 hours from:
    - CH440 - POLYMER SYNTHESIS & CHARACTERI (3)
    - CH361 - GENERAL BIOCHEMISTRY (3)

Spring

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- Complete all of the following
  - 11 hours from:
    - MAE310 - FLUID MECHANICS I (3)
    - CHE342 - TRANSPORT PHENOMENA (3)
    - CHE441 - CHEM KINETICS & REACTOR DESIGN (3)
    - CHE439 - UNIT OPERATIONS I (2)
  - 3 Hours Technical Elective
  - 3 Hours Area II or IV Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 8 hours from:
    - CHE443 - TRANSPORT PROCESSES (3)
    - CHE446 - ANAL & DESIGN TRANSPORT EQUIP (3)
    - CHE440 - UNIT OPERATIONS II (2)
  - 3 hours from:
    - CHE495 - POLYMER ENGINEERING (3)
    - CHE460 - INTRO TO BIOPROCESS ENGR (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Spring

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- Complete all of the following
  - 9 hours from:
    - CHE448 - CHEMICAL ENGINEERING DESIGN (3)
    - CHE485 - PROCESS SAFETY & TOXICOLOGY (3)
    - CHE445 - CHEMICAL PROCESS CONTROL (3)
  - 3 hours from:
    - CHE494 - APPLIED MATERIALS ENGINEERING (3)
    - CHE461 - BIOSEPARATIONS (3)
  - 3 Hours Area II or IV Charger Foundations Course

## **Chemical Engineering (BSChE) - CHE, Biotechnology (Concentration)**

### **Description**

The BSChEE in Chemical Engineering with a concentration in Biotechnology trains students for careers in biotech, pharmaceutical research, development and manufacturing, agricultural products, diagnostics and new food and energy sources. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cme>.

## **Chemical Engineering (BSChE) - CHE, Materials (Concentration)**

### **Description**

The BSChEE in Chemical Engineering with a concentration in Materials is intended to train students for careers in research, development, and manufacturing a variety of advanced materials and specialty chemicals like lubricants, elastomers, composites, fragrances, polymers, and surfactants. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cme>.

## **Chemical Engineering (BSCheE) - JUMP: BSCHEE, Chemical Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSCHEE in Chemical Engineering to an MSE in Chemical Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Chemical Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CHE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Chemical@uah.edu

### **JUMP Admission Requirements**

- Earn a minimum grade of B- in all of the following:
  - CHE342 - TRANSPORT PHENOMENA (3)
  - CHE344 - CHEM ENGR THERMODYNAMICS (3)
  - CHE347 - QUANTITATIVE MODELING FOR CHE (3)

## **Chemical Engineering (MSE)**

## **Program Description**

The MSE in Chemical Engineering provides students a deep understanding of the various advanced concepts and techniques of chemical engineering. It helps them develop a critical attitude which can be used to solve various technical problems. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cme>.

## **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Major Requirements**

### Core Requirements

12 Total Credits

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- Complete all of the following
  - 3 hours from:
    - CHE648 - TRANSPORT PHENOMENA I (3)
    - CHE649 - TRANSPORT PHENOMENA II (3)
  - 3 hours from:
    - CHE641 - ADV THERMODYNAMICS (3)
    - CHE646 - THERMODYNAMICS OF MATRLS (3)
  - 3 hours from:
    - CHE658 - CATALYSIS/REACTOR DESIGN (3)
  - 3 hours from the following:  
Supporting engineering courses

### First Minor

6 Total Credits

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- Complete all of the following
  - 6 hours from the following:  
approved engineering area of specialization
  - At least 50% of the total 30 credits must be CHE courses. Students are required to select an academic advisor and set up the MSE Program of Study early on to identify these elective courses. The selected courses must be approved by the student's academic advisor or Supervisory Committee.

### Second Minor

6 Total Credits

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- Complete all of the following
  - 6 hours from:
    - MAE692 - GRAD ENGR ANALYSIS I (3)
    - MAE693 - GRAD ENGR ANALYSIS II (3)
    - ISE690 - STATISTICAL METHODS FOR ENGR (3)
    - PH607 - MATHEMATICAL METHODS I (3)
    - PH609 - MATHEMATICAL METHODS II (3)
  - The selected courses must be approved by the student's academic advisor or Supervisory Committee.
  - 500-level and above MA courses allowed (excluding those cross-listed as 400, special topics, seminars, and thesis courses)

### Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - CHE699 - MASTER'S THESIS (0 - 9)
  - Plan II: Non-Thesis
    - 6 hours from the following:  
graduate courses to complete an approved extended program of study

Grand Total Credits: **30**

## **Civil Engineering (BSCE)**

### **Program Description**

The BSCE in Civil Engineering deals with the design, construction, and maintenance of the physical and naturally built environment. This program is designed to provide foundational depth in mechanics, thermodynamics, hydraulics, transportation, materials, structural design and analysis, soil mechanics, environmental systems, and structural design and analysis. This program has four concentrations; general breadth, structural, transportation, and environmental engineering. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>.

### **Number of Credit Hours**

128

### **Degree Requirements**

Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

### **General Education (Charger Foundations) Requirements**

Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II



- Complete all of the following
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)

- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:
 

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)

- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area IV: History, Social and Behavioral Sciences - World
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
  - keyboard\_arrow\_up*
  - Area IV: History, Social and Behavioral Sciences -US
    - HY221 - UNITED STATES TO 1877 (3)
    - HY222 - UNITED STATES SINCE 1877 (3)
  - keyboard\_arrow\_up*
  - Area IV - History, Social and Behavioral Sciences - SBS
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)
    - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
    - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY201 - LIFE-SPAN DEVELOPMENT (3)
    - SOC100 - INTRO TO SOCIOLOGY (3)
    - SOC103 - INTRO TO CRIMINOLOGY (3)
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

22 Total Credits

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- 22 hours from:
  - MA172 - CALCULUS II (4)
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)

Grand Total Credits: **22**

## **Major Requirements**

Engineering

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR399 - ENGINEERING MENTORING II

Civil Engineering

60 Total Credits

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- 60 hours from:
  - CE211 - CIVIL ENGINEERING GRAPHICS (2)
  - CE271 - STATICS (3)
  - CE272 - DYNAMICS (3)
  - CE284 - SURVEYING (2)
  - MAE310 - FLUID MECHANICS I (3)
  - CE321 - INTRO TO TRANSPORTATION ENG (3)
  - ISE321 - ENGINEERING ECONOMY (3)
  - MAE341 - THERMODYNAMICS I (3)
  - CE370 - MECHANICS OF MATERIALS (3)
  - CE375 - MECHANICS OF MATERIALS LAB (1)
  - CE372 - SOIL MECHANICS & FOUNDATION (3)
  - CE373 - SOIL MECHANICS LAB (1)
  - CE380 - CIVIL ENGINEERING MATERIALS (3)
  - CE381 - STRUCTURAL ANALYSIS I (3)
  - ISE390 - PROB & ENGR STATISTICS I (3)
  - CE422 - TRAFFIC ENGINEERING DESIGN (3)
  - CE441 - HYDRAULIC ENGINEERING DESIGN (3)
  - CE449 - INTRO ENVIRONMENTAL ENGR (3)
  - CE483 - REINFORCED CONCRETE DESIGN (3)
  - CE484 - STEEL DESIGN (3)
  - CE485 - FOUNDATION ENGINEERING (3)
  - CE498 - CIVIL ENGINEERING DESIGN I (1)
  - CE499 - CIVIL ENGINEERING DESIGN II (2)

Civil Engineering Electives

6 Total Credits

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- Complete 1 of the following
  - 6 hours from:
    - CE481 - STRUCTURAL ANALYSIS II (3)
    - CE487 - BRIDGE DESIGN (3)
  - 6 hours from:
    - CE456 - WATER QUALITY CONTROL PROC (3)
    - CE457 - HYDROLOGY (3)
  - 6 hours from:
    - CE411 - INTRO GEOGRAPHICAL INFO SYS (3)
    - CE420 - URBAN TRANSPORTATION PLANNING (3)
  - 6 hours from any CE 400 - 600 level course(s)

Grand Total Credits: **70**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 8 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 4 hours from:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - MA172 - CALCULUS II (4)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 6 Hours of HSBS/HFA

Year 2

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Fall

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- 18 hours from:
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - MA201 - CALCULUS III (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - CE271 - STATICS (3)
  - CE211 - CIVIL ENGINEERING GRAPHICS (2)
  - CE284 - SURVEYING (2)
  - CE284L - SURVEYING LAB

Spring

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- Complete all of the following
  - 14 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - CE272 - DYNAMICS (3)
    - CE370 - MECHANICS OF MATERIALS (3)
    - CE375 - MECHANICS OF MATERIALS LAB (1)
    - EGR299 - ENGINEERING MENTORING I
  - 3 Hours of HSBS/HFA

Year 3

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Fall

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- Complete all of the following
  - 6 hours from:
    - MAE341 - THERMODYNAMICS I (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)
  - 3 Hours of HSBS/HFA
  - 6 hours from:
    - CE381 - STRUCTURAL ANALYSIS I (3)
    - EGR399 - ENGINEERING MENTORING II
    - ISE321 - ENGINEERING ECONOMY (3)

Spring

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- Complete all of the following
  - 13 hours from:
    - MAE310 - FLUID MECHANICS I (3)
    - CE380 - CIVIL ENGINEERING MATERIALS (3)
    - CE380L - CE MATERIALS LAB
    - CE372 - SOIL MECHANICS & FOUNDATION (3)
    - CE373 - SOIL MECHANICS LAB (1)
    - CE321 - INTRO TO TRANSPORTATION ENG (3)
  - 3 Hours HSBS/HFA

Year 4

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Fall

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- Complete all of the following
  - CE Elective
    - Complete 1 of the following
      - 3 hours from:
        - CE481 - STRUCTURAL ANALYSIS II (3)
        - CE457 - HYDROLOGY (3)
        - CE411 - INTRO GEOGRAPHICAL INFO SYS (3)
      - CE 400+
    - 3 Hours of HSBS/HFA
    - 10 hours from:
      - CE449 - INTRO ENVIRONMENTAL ENGR (3)
      - CE484 - STEEL DESIGN (3)
      - CE422 - TRAFFIC ENGINEERING DESIGN (3)
      - CE498 - CIVIL ENGINEERING DESIGN I (1)

Spring

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- Complete all of the following
  - CE Elective
    - Complete 1 of the following
      - 3 hours from:
        - CE487 - BRIDGE DESIGN (3)
        - CE456 - WATER QUALITY CONTROL PROC (3)

- CE420 - URBAN TRANSPORTATION PLANNING (3)
- CE 400+
  - 11 hours from:
    - CE441 - HYDRAULIC ENGINEERING DESIGN (3)
    - CE483 - REINFORCED CONCRETE DESIGN (3)
    - CE485 - FOUNDATION ENGINEERING (3)
    - CE499 - CIVIL ENGINEERING DESIGN II (2)
    - CE499L - DESIGN II LABORATORY

## **Civil Engineering (BSCE) - CE, Environmental (Concentration)**

### **Description**

The BSCE in Civil Engineering with an Environmental concentration provides students with a strong foundation in environmental management and remediation through a variety of topics including water quality, atmospheric pollution, hydrology, environmental systems, and environmental sampling. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>

## **Civil Engineering (BSCE) - CE, General (Concentration)**

### **Description**

The BSCE in Civil Engineering with a General concentration is the path for students pursuing the degree without also pursuing a structural, environmental, or transportation concentration. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>.

## **Civil Engineering (BSCE) - CE, Structural (Concentration)**

### **Description**

The BSCE in Civil Engineering with a Structural concentration provides students with a strong background in many aspects of structural analysis, foundations, reinforced concrete, steel design, bridge design, and advanced structural design. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>

## **Civil Engineering (BSCE) - CE, Transportation (Concentration)**

### **Description**

The BSCE in Civil Engineering with a concentration in Transportation provides students with the skills necessary to tackle tomorrow's data management and transportation issues through topics including transportation modeling and simulation, application of GIS to transportation issues, use of traffic crash data, and urban transportation planning. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>.

## **Civil Engineering (BSCE) - JUMP: BSCE, Civil Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSCE in Civil Engineering to an MSE in Civil Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Civil Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Civil@uah.edu

## **Civil Engineering (MSE)**

### **Program Description**

The MSE in Civil Engineering enables students to dive deeper into the principles of the field while putting them on an upward trajectory in their engineering career. It helps to develop a deep understanding of the various advanced concepts and techniques of civil engineering. Students will start to develop a critical attitude which can be used to solve various technical problems. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>.



## **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Major Requirements**

### Major Requirements

12 Total Credits

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- 12 hours from the following:  
graduate courses in an engineering major including supporting engineering courses

### First Minor

6 Total Credits

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- 6 hours from the following:  
approved engineering area of specialization

### Second Minor

0 Total Credits

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- hours from the following:  
Mathematics, Graduate Engineering Analysis, or Statistics (ISE 690)

### Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - CE699 - MASTER'S THESIS (0 - 9)
  - Plan II: Non-Thesis
    - 6 hours from the following:  
graduate coursework to complete an approved extended program of study

Grand Total Credits: **24**

## **Civil Engineering (PhD)**

### **Program Description**

The PhD in Civil Engineering provides students with the opportunity to work with emerging technology and industrial partners, and engage in research that has a direct impact on society. It is beneficial for students to develop a center of excellence in civil engineering, and to carry out research in the areas of infrastructure and eco-friendly technologies. Benefits to students include better job opportunities, higher salaries, research opportunities, and specialized skills. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/cee>.

### **Number of Credit Hours**

72

## **Degree Requirements**

- Graduate School Degree Requirements

- Complete all of the following
  - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
  - No grade of D or F may be counted toward a graduate degree.
  - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
  - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Major Requirements**

### Requirements

27 Total Credits

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- Complete all of the following
  - Students entering the joint PhD program after completing their master's degree must complete 24 semester hours of coursework beyond the coursework required for their master's degree. The combined coursework completed in the master's and doctoral programs of study must satisfy the semester hour requirements for the major and minor areas specified below.
  - 27 hours from the following:  
graduate coursework in a major area

### First Minor

9 Total Credits

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- 9 hours from the following:  
approved engineering area of specialization

### Second Minor

6 Total Credits

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- 6 hours from the following:  
Mathematics, Graduate Engineering Analysis, or Statistics (ISE 690)

### Additional Courses

6 Total Credits

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- 6 hours from the following:  
approved engineering area of specialization

### Dissertation Requirements

24 Total Credits

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- Complete all of the following
  - 24 hours from:
    - CE799 - DOCTORAL DISSERTATION (0 - 9)
  - 24 semester hours of CE 799 must be completed for those who entered the program with a master's degree without a thesis. 18 semester hours of CE 799 must be completed for those who entered the program with a thesis.

Grand Total Credits: **72**

## **Computer Engineering (BSCPE)**

### **Program Description**

The BSCPE in Computer Engineering teaches students about hardware, software, and computing principles in the context of electronic devices and systems. Computer engineering majors develop a broad set of mathematical and computing skills that provides a strong foundation for hardware and software design, construction, and testing. Seniors participate in an open-ended, design oriented capstone project as well as electives to explore their computing interests. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### **Number of Credit Hours**

## **Degree Requirements**

### Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Literature
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:

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Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

18 Total Credits

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- 18 hours from:
  - MA172 - CALCULUS II (4)
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

Grand Total Credits: **18**



## **Major Requirements**

Computer Science - 6 Hours

6 Total Credits

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- 6 hours from:
  - CS214 - INTRO DISCRETE STRUCTURE (3)
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)

Engineering - 4 Hours

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR299 - ENGINEERING MENTORING I
  - EGR399 - ENGINEERING MENTORING II

Computer Engineering

53 Total Credits

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- Complete all of the following
  - 37 hours from:
    - EE202 - INTRO DIGITAL LOGIC DSGN (3)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - CPE211L - LABORATORY
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
    - CPE221 - COMPUTER ORGANIZATION (3)
    - EE315 - INTRO ELECTRONIC ANALYS & DSGN (3)
    - EE316 - ELE CIRCUITS & ELTRNC DSGN LAB (1)
    - CPE322 - DIGITAL HDWR DESIGN FUNDMNTLS (3)
    - CPE324 - ADV LOGIC DESIGN LABORATORY (1)
    - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
    - CPE325 - EMBEDDED SYSTEMS LAB (1)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)
    - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
    - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)
    - EE384 - DIG SIGNAL PROCESS LAB (1)
    - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)
  - 3 hours from:
    - EE385 - RANDOM SIGNALS & NOISE (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)
  - 13 hours from:
    - CPE431 - INTRO COMPUTER ARCHITECTURE (3)
    - CPE434 - OPERATING SYSTEMS (3)
    - CPE435 - OPERATING SYSTEMS LABORATORY (1)
    - CPE495 - COMPUTER ENGINEERING DESIGN I (3)
    - CPE496 - COMPUTER ENGINEERING DESIGN II (3)

Grand Total Credits: **63**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Year 2

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No Rules

Fall

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- 17 hours from:
  - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
  - CPE211L - LABORATORY
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EGR299 - ENGINEERING MENTORING I
  - MA201 - CALCULUS III (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

Spring

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- 15 hours from:
  - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
  - CPE221 - COMPUTER ORGANIZATION (3)
  - CS214 - INTRO DISCRETE STRUCTURE (3)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

Year 3

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No Rules

Fall

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- Complete all of the following
  - 13 hours from:
    - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)

- CPE325 - EMBEDDED SYSTEMS LAB (1)
- CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
- CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
- EE315 - INTRO ELECTRONIC ANALYSIS & DESIGN (3)
- EGR399 - ENGINEERING MENTORING II
- 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 11 hours from:
    - CPE322 - DIGITAL HDWR DESIGN FUNDMENTLS (3)
    - CPE324 - ADV LOGIC DESIGN LABORATORY (1)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)
    - CPE381 - FUND SIGNALS & SYS FOR COMP EN (3)
    - EE316 - ELE CIRCUITS & ELTRNC DSGN LAB (1)
  - 3 Hours of Computer Engineering Electives (a list can be found in Major Requirements section)
  - 3 Hours Area II or IV Charger Foundations Course

Year 4

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No Rules

Fall

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- Complete all of the following
  - 7 hours from:
    - CPE497 - COMPUTER ENGR INTERNSHIP (1 - 3)
    - CPE495 - COMPUTER ENGINEERING DESIGN I (3)
    - EE384 - DIG SIGNAL PROCESS LAB (1)
  - 3 hours from:
    - EE385 - RANDOM SIGNALS & NOISE (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)
  - 3 Hours of Computer Engineering Electives (a list can be found in Major Requirements section)
  - 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 7 hours from:
    - CPE434 - OPERATING SYSTEMS (3)
    - CPE435 - OPERATING SYSTEMS LABORATORY (1)
    - CPE496 - COMPUTER ENGINEERING DESIGN II (3)
  - 6 Hours of Computer Engineering Electives (a list can be found in Major Requirements section)
  - 3 Hours Area II or IV Charger Foundations Course

## Computer Engineering (BSCPE) - CPE, Cybersecurity (Concentration)

### Concentration Requirements

Requirements

12 Total Credits

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- Complete all of the following
  - Core
    - 6 hours from:
      - CPE348 - INTRO TO COMPUTER NETWORKS (3)
      - CPE449 - INTRO TO CYBERSECURITY ENGINEERING (3)
  - Computer Engineering Elective
    - 3 hours from:
      - CPE455 - SECURE SOFTWARE DEVELOPMENT (3)
      - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
      - CPE459 - SYSTEMS SECURITY (3)
  - Computer Science Elective
    - 3 hours from:
      - CS465 - NETWORK SECURITY (3)
      - CS480 - MOBILE DIGITAL FORENSICS (3)
      - CS488 - INTRO TO BIG DATA COMPUTING (3)

Grand Total Credits: **12**

## Computer Engineering (BSCPE) - CPE, General (Concentration)

### Concentration Requirements

Requirements

12 Total Credits

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- Complete all of the following
  - Only 3 hours may come from areas other than CPE, EE, or CS
  - 12 hours from:
    - CPE412 - INTRO TO PARALLEL PROGRAMMING (3)
    - CPE423 - HARDWARE/SOFTWARE CO-DESIGN (3)
    - CPE426 - VLSI HARDWARE DESC LANG/MODL/S (3)
    - CPE427 - VLSI DESIGN I (3)
    - CPE436 - INTERNALS OF MODERN OPER SYS (3)
    - CPE449 - INTRO TO CYBERSECURITY ENGINEERING (3)
    - CPE455 - SECURE SOFTWARE DEVELOPMENT (3)
    - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
    - CPE459 - SYSTEMS SECURITY (3)
    - CPE490 - SPECIAL TOPICS IN COMP ENGR (1 - 3)
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CS330 - ARTFCL INTEL & GAME DEV (3)
    - CS347 - INTRO VIDEO GAME DESGN & PROGM (3)
    - CS371 - MOBILE COMPUTING APP INCT & D (3)
    - CS391 - INT NETWORK ADMIN PRINC WINDOW (3)
    - CS392 - INT NETWORK ADMIN PRINC FOR UN (3)
    - CS396 - SPECIAL TOPICS (3)
    - CS403 - INT FORML LANG AUTO THRY (3)
    - CS424 - PRINCIPLES PROGRAMMING LANG (3)
    - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
    - CS445 - INTRO COMPUTER GRAPHICS (3)

- CS453 - CLIENT/SERVER ARCHITECTURES (3)
- CS465 - NETWORK SECURITY (3)
- CS480 - MOBILE DIGITAL FORENSICS (3)
- CS485 - INTRO CYBERSECURITY ENGR (3)
- CS487 - DATABASE SYSTEMS (3)
- CS488 - INTRO TO BIG DATA COMPUTING (3)
- CS496 - SPECIAL TOPICS (1 - 9)
- EE307 - ELECTRICITY & MAGNETISM (3)
- EE308 - ELECTROMAGNETIC ENGR (3)
- EE385 - RANDOM SIGNALS & NOISE (3)
- EE386 - INTRO CONTROL/ROBOTIC SYS (3)
- EE410 - SELECTED TOPICS/ECE (1 - 6)
- EE411 - ELECTRIC POWER SYSTEM (3)
- EE412 - SR DSGN PROJ ELECT ENGR (1 - 6)
- EE414 - ANALOG & DIGITAL FILTER DESIGN (3)
- EE416 - ELECTRONICS II (3)
- EE424 - INTRO DATA COMMUN NETWORKS (3)
- EE436 - DIGITAL ELECTRONICS (3)
- EE451 - OPTOELECTRONICS (3)
- EE453 - LASER SYSTEMS (3)
- EE454 - OPTICAL FIBER COMMUNICATIONS (3)
- EE486 - INTRO MODERN CONTROL SYSTEMS (3)
- ISE340 - OPERATIONS RESEARCH (3)
- ISE391 - PROB/ENGR STAT II (3)
- ISE423 - INTR STATISTICAL QUALITY CONTR (3)
- ISE426 - DSGN & ANALY OF EXPERIM (3)
- ISE430 - MANUF SYS & FACILITIES DESIGN (3)
- ISE447 - INTRO TO SYSTEMS SIMULATION (3)
- MA385 - INTRO TO PROBABILITY & STATIST (3)
- MA415 - INTRO NUMERICAL METHODS (3)
- MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
- MA450 - COMBINATORIAL ENUMERATION (3)
- MA452 - INTRO TO REAL ANALYSIS (3)
- MA456 - METHODS OF PARTIAL DIFF EQUA (3)
- MA458 - APPLIED LINEAR ALGEBRA (3)
- MA460 - INTRO FOURIER ANALYSIS (3)
- MA465 - INTRO TO MATH MODELING (3)
- MA487 - INTRO TO MATH STATISTICS (3)
- IS463 - DIGITAL FORENSICS (3)
- CS430 - SURVEY ARTIFICIAL INTELLIGENCE (3)
- CS454 - INTRO TO CLOUD COMPUTING (3)

Grand Total Credits: **12**

## **Computer Engineering (BSCPE) - JUMP, BSCPE, Electrical Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Computer Engineering to an MSE in Electrical Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Electrical Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CPE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Electrical@uah.edu

## **Computer Engineering (BSCPE) - JUMP: BSCPE, Computer Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSCPE in Computer Engineering to an MSE in Computer Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Program Specific

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- CPE 531 and CPE 534 are not eligible to be taken as JUMP classes.

Graduate School JUMP Rules

*keyboard\_arrow\_up*

- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Computer Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CPE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Computer@uah.edu

## **Computer Engineering (BSCPE) - JUMP: BSCPE, Cyber Security - Computer Engineering Track (MSCBS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSCPE in Computer Engineering to an MSCBS in Cybersecurity - Computer Engineering track is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Cybersecurity (MS)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CPE@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Cyber\_CPE@uah.edu



## **Computer Engineering (BSCPE) - JUMP: BSCPE, Software Engineering - Computer Engineering Track (MSSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSCPE in Computer Engineering to an MSSE in Software Engineering - Computer Engineering track is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Computer Engineering (MSSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CPE@uah.edu

### **JUMP Landing (Graduate Program)**

MSSE\_Computer@uah.edu

## **Computer Engineering (MSE)**

## **Program Description**

The MSE Computer Engineering challenges students who want to improve the world around them through continuous technological advancement. Graduate students expand on their computer architecture foundation by advancing their math and science skills and improving their ability to articulate why their work matters. A master's degree offers a strong theoretical background to complement hands-on learning. For many professionals in computer engineering, a graduate degree provides access to a lucrative salary. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

### ECE Graduate Requirements

- At least 50% of coursework (non-dissertation/thesis courses taken at UAH) must be ECE courses

## **Major Requirements**

### Major Requirements

12 Total Credits

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- Complete all of the following
  - 9 hours from:
    - CPE512 - INTRO TO PARALLEL PROGRAMMING (3)
    - CPE526 - VLSI HARDWARE DESC LANG/MODL/S (3)
    - CPE631 - ADV COMP SYSTEMS ARCHITECTURE (3)
  - 3 hours from the following:  
graduate course in computer engineering or a related field
  - Students who have completed these or similar courses elsewhere may request course substitutions. All substitutions must be approved by the student's academic advisor.

### Math Minor

6 Total Credits

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- 6 hours from the following:  
coursework with mathematical or theoretical foundation. The courses must be approved by the student's academic advisor.

### Engineering Area of Specialization Minor

6 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from the following:  
a 2-course sequence from engineering or computer science
  - At least one of those courses should be at the 600 level. The selected courses must be approved by the student's academic advisor or Supervisory Committee.

### Plan Options

6 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - CPE699 - MASTER'S THESIS (0 - 9)
  - Plan II: Non-Thesis
    - Complete all of the following
      - 6 hours from the following:  
graduate coursework to complete an approved extended program of study
      - At least 3 semester hours must be at the 600-level or above

Grand Total Credits: **30**

## **Computer Engineering (MSSE) (Fully Online)**

### **Program Description**

The MSSE - Computer Engineering Track provides a solid background in software engineering principles and practice as applied to large and complex systems. The curriculum also allows students to focus in depth in specialized areas of interest to many software engineers: Big Data and Data Mining, Project Management, Parallel Programming, Embedded Systems, and Advanced Cybersecurity. Graduates from this program are prepared to be lead software engineers/software architects and work in jobs such as quality assurance, or project management, software safety, and software data analysis. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Delivery Method**

Fully Online

## **Number of Credit Hours**

30

## **Degree Requirements**

- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
- At least 50% of coursework (non-dissertation/thesis courses taken at UAH) must be college of engineering courses

## **Major Requirements**

Computer Science Core

12 Total Credits

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- Complete all of the following
  - 9 hours from:
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS617 - DES & ANALY OF ALGORITHM (3)
    - CS656 - SOFTWARE TESTING (3)
  - 3 hours from:
    - CS690 - ADVANCED OPERATING SYSTEMS (3)
    - CS613 - COMPUTER ARCHITECTURES (3)
    - CPE536 - INTERNALS OF MODERN OPER SYS (3)
    - CPE631 - ADV COMP SYSTEMS ARCHITECTURE (3)

Cybersecurity

3 Total Credits

*keyboard\_arrow\_up*

- 3 hours from:
  - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
  - CS585 - INTRO CYBERSECURITY ENGR (3)
  - CS685 - APPLIED CRYPTOGRAPHY (3)

#### Focus Area

6 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - Area 1: Big Data/Data Mining
    - 6 hours from:
      - CS554 - INTRO TO CLOUD COMPUTING (3)
      - CS637 - DEEP LEARNING (3)
      - CS640 - MACHINE LEARNING (3)
      - CS641 - DATA MINING (3)
  - Area 2: Project Management
    - Complete all of the following
      - 3 hours from:
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)
      - 3 hours from:
        - EM660 - ENGR MGMT THEORY (3)
        - MGT601 - TECH & INNOVATION MGMT (3)
        - MKT604 - NEW PRODUCT DEVELOPMENT (3)
  - Area 3: Parallel Programming
    - 6 hours from:
      - CPE512 - INTRO TO PARALLEL PROGRAMMING (3)
      - CPE612 - PARALLEL ALGORITHMS (3)
      - CPE613 - GEN PURPOSE GPU COMPUTING (3)
  - Area 4: Embedded Systems
    - 6 hours from:
      - Course Not Found
      - CPE523 - HARDWARE/SOFTWARE CO-DESIGN (3)
      - CPE621 - ADVANCED EMBEDDED SYSTEMS (3)
  - Area 5: Advanced Cybersecurity
    - 6 hours from:
      - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
      - CPE645 - APPLIED CRYPTOGRAPHY (3)
      - IS663 - COMPUTER FORENSICS (3)
  - Area 6: Model-Based Engineering
    - Complete all of the following
      - 6 hours from:
        - ISE627 - ENGINEERING SYSTEMS (3)
        - ISE580 - SYSTEMS ENGINEERING MODELING (3)
      - Recommended to take ISE 627 before ISE 580.

#### Elective

3 Total Credits

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- 3 hours from the following:
  - elective approved by advisor

#### Plan Options

6 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:

- CPE699 - MASTER'S THESIS (0 - 9)

Plan II: Non-Thesis

- Complete all of the following
  - 3 hours from the following:
    - elective approved by advisor
  - 3 hours from:
    - CPE657 - SOFTWARE STUDIO (3)

Grand Total Credits: **30**

## Computer Engineering (PhD)

### Program Description

The PhD in Computer Engineering is a research-oriented degree that allows students to explore the depths of computer engineering and develop new technologies. It is ideal for those who want to pursue a career in academia or research and development and is a shared program with the University of Alabama at Birmingham. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### Number of Credit Hours

66

### Degree Requirements

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Major Requirements**

CPE Major

18 Total Credits

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- 18 hours from the following:  
Select a major of approved related coursework in Computer Engineering

Math Minor

12 Total Credits

*keyboard\_arrow\_up*

- Complete 1 of the following
  - Option 1
    - 12 hours from the following:  
approved graduate level mathematics courses
  - Option 2
    - Complete all of the following
      - 6 hours from the following:  
approved graduate level mathematics courses  
Sequence Options
      - Complete 1 of the following
        - 6 hours from:
          - MA585 - PROBABILITY (3)
          - CPE619 - MODELING & ANAL COMPU/COMMUN S (3)
        - 6 hours from:
          - MA540 - COMBINATORIAL ENUMERATION (3)
          - MA640 - GRAPH THEORY (3)
        - 6 hours from:
          - MA640 - GRAPH THEORY (3)
          - MA740 - COMBINATORIAL ALGORITHMS (3)
        - 6 hours from:
          - EE629 - ANAL & COMP METH IN ELEC ENG I (3)
          - EE630 - ANAL & COMP METHODS ELEC EG II (3)
        - 6 hours from:
          - MA542 - ALGEBRA (3)
          - CPE645 - APPLIED CRYPTOGRAPHY (3)

Engineering or Computer Science Area of Specialization Minor

12 Total Credits

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- 12 hours from the following:  
approved coursework in engineering or computer science

Supporting Coursework

6 Total Credits

*keyboard\_arrow\_up*

- 6 hours from the following:  
approved ECE graduate coursework

Dissertation Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - CPE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## Cybersecurity Engineering (BS)

### Program Description

The BS in Cybersecurity Engineering program enables students to pursue careers in the cybersecurity and information assurance fields. The program provides a foundation in computer programming, computer hardware and software, and digital circuits before delving into cybersecurity topics such as digital forensics, software reverse-engineering, network security and cybersecurity management. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### Number of Credit Hours

124

### Degree Requirements

Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

### General Education (Charger Foundations) Requirements

Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

9 Total Credits

*keyboard\_arrow\_up*



- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:
 

*keyboard\_arrow\_up*

Area II: Humanities and Fine Arts - Literature

      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)

- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:
 

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)

- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)
- 3 hours from:
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  - Area IV: History, Social and Behavioral Sciences - World
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
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  - Area IV: History, Social and Behavioral Sciences -US
    - HY221 - UNITED STATES TO 1877 (3)
    - HY222 - UNITED STATES SINCE 1877 (3)
  - keyboard\_arrow\_up*
  - Area IV - History, Social and Behavioral Sciences - SBS
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)
    - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
    - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY201 - LIFE-SPAN DEVELOPMENT (3)
    - SOC100 - INTRO TO SOCIOLOGY (3)
    - SOC103 - INTRO TO CRIMINOLOGY (3)
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

15 Total Credits

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- 15 hours from:
  - MA172 - CALCULUS II (4)
  - MA201 - CALCULUS III (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

Grand Total Credits: **15**

### **Major Requirements**

Engineering

4 Total Credits

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- Complete all of the following
  - 4 hours from:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - EGR299 - ENGINEERING MENTORING I
    - EGR399 - ENGINEERING MENTORING II

- EGR 299 and EGR 399 are required even though they are 0 credit hour courses.

## Cybersecurity Engineering

63 Total Credits

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- 63 hours from:
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EE203 - DIGITAL LOGIC DESIGN LAB (1)
  - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
  - CPE211L - LABORATORY
  - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
  - CS214 - INTRO DISCRETE STRUCTURE (3)
  - CPE221 - COMPUTER ORGANIZATION (3)
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
  - CPE325 - EMBEDDED SYSTEMS LAB (1)
  - CPE348 - INTRO TO COMPUTER NETWORKS (3)
  - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
  - ISE390 - PROB & ENGR STATISTICS I (3)
  - CPE434 - OPERATING SYSTEMS (3)
  - CPE435 - OPERATING SYSTEMS LABORATORY (1)
  - CPE449 - INTRO TO CYBERSECURITY ENGINRG (3)
  - IS450 - CYBERSECURITY MANAGEMENT (3)
  - CS465 - NETWORK SECURITY (3)
  - CS480 - MOBILE DIGITAL FORENSICS (3)
  - CPE455 - SECURE SOFTWARE DEVELOPMENT (3)
  - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
  - CPE459 - SYSTEMS SECURITY (3)
  - CPE488 - CYBERSECURITY ENG CAPSTONE I (3)
  - CPE498 - CYBERSECY ENGR CAPSTONE II (3)

## Electives

6 Total Credits

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- 6 hours from:
  - CPE412 - INTRO TO PARALLEL PROGRAMMING (3)
  - CPE436 - INTERNALS OF MODERN OPER SYS (3)
  - CPE490 - SPECIAL TOPICS IN COMP ENGR (1 - 3)
  - CPE499 - PROJECT IN COMPUTER ENGRG (3)
  - CS307 - OBJECT ORIENT/PROG C++ (3)
  - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - CS424 - PRINCIPLES PROGRAMMING LANG (3)
  - CS430 - SURVEY ARTIFICIAL INTELLIGENCE (3)
  - CS453 - CLIENT/SERVER ARCHITECTURES (3)
  - CS454 - INTRO TO CLOUD COMPUTING (3)
  - CS466 - OFFENSIVE SECURITY (3)
  - CS487 - DATABASE SYSTEMS (3)
  - CS488 - INTRO TO BIG DATA COMPUTING (3)
  - CS495 - SEL TOPICS:UNDERGRAD CS (3)

Grand Total Credits: **73**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following

- 4 hours from:
  - MA171 - CALCULUS I (4)
- 4 hours from:
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)
- 3 hours from:
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
- Earned at least 1 of the following:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - HON101 - INTRO TO HONORS RESEARCH (1)
- 3 hours from:
  - EH101 - COLLEGE WRITING I (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Year 2

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Fall

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- Complete all of the following
  - 14 hours from:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - CPE211L - LABORATORY
    - EE202 - INTRO DIGITAL LOGIC DSGN (3)
    - EGR299 - ENGINEERING MENTORING I
  - 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 13 hours from:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
    - CPE221 - COMPUTER ORGANIZATION (3)
    - EE203 - DIGITAL LOGIC DESIGN LAB (1)
  - 3 Hours Area II or IV Charger Foundations Course

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CPE353 - SOFTWARE DESIGN & ENGINEERING (3)
  - 4 hours from:
    - EGR399 - ENGINEERING MENTORING II
    - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
    - CPE325 - EMBEDDED SYSTEMS LAB (1)
  - 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 10 hours from:
    - CPE455 - SECURE SOFTWARE DEVELOPMENT (3)
    - CPE434 - OPERATING SYSTEMS (3)
    - CPE435 - OPERATING SYSTEMS LABORATORY (1)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)
  - 3 Hours Cybersecurity Engineering Elective
  - 3 Hours Area II or IV Charger Foundations Course

Year 4

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Fall

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- 15 hours from:
  - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
  - CPE449 - INTRO TO CYBERSECURITY ENGINEERING (3)
  - CS465 - NETWORK SECURITY (3)
  - CPE488 - CYBERSECURITY ENG CAPSTONE I (3)
  - IS450 - CYBERSECURITY MANAGEMENT (3)

Spring

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- Complete all of the following
  - 9 hours from:
    - CPE459 - SYSTEMS SECURITY (3)
    - CPE498 - CYBERSECURITY ENGR CAPSTONE II (3)
    - CS480 - MOBILE DIGITAL FORENSICS (3)
  - 3 Hours Cybersecurity Engineering Elective

**Cybersecurity Engineering (BS) - JUMP: BS CYBER, Cybersecurity - Computer Engineering Track (MSCBS)**

## **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Cybersecurity to an MS in Cybersecurity - Engineering Track is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

## **JUMP Completion Requirements**

Program Specific  
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- Complete all of the following
  - Students may not count more than one class of the group CPE 555, CPE 557, CPE 559 for JUMP.
  - Complete 1 of the following
    - 6 hours from the following:  
courses at the 500/600 level that satisfy both the BS CBSY electives and the MSCBS engineering track course requirements
    - Complete all of the following
      - 3 hours from the following:  
courses at the 500/600 level that satisfy both the BS CBSY electives and the MSCBS engineering track course requirements
      - 3 hours from:
        - CPE555 - SECURE SOFTWARE DEV (3)
        - CPE557 - SOFTWARE REVERSE ENGR (3)
        - CPE559 - SYSTEMS SECURITY (3)

Graduate School JUMP Rules  
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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Approved Master's Program**

Cybersecurity (MS)

## **Max Shared Hours**

6

## **Minimum GPA**

3.5

## **JUMP Launch (Undergraduate Program)**

JUMP\_CYBER@uah.edu

## **JUMP Landing (Graduate Program)**

MS\_Cyber\_CPE@uah.edu

## **Cybersecurity (Graduate Certificate)**

### **Number of Credit Hours**

15

### **Major Requirements**

- Complete all of the following  
Core Requirements
  - Complete all of the following
    - 3 hours from:
      - CS585 - INTRO CYBERSECURITY ENGR (3)
      - CPE549 - INTRO TO CYBERSECURITY ENGINEER (3)
    - 3 hours from:
      - CS670 - WIRELESS SENSOR NETWORKS (3)
      - CPE646 - WIRELESS SENSOR NETWORKS (3)
    - 3 hours from:
      - CS685 - APPLIED CRYPTOGRAPHY (3)
      - CPE645 - APPLIED CRYPTOGRAPHY (3)
  - Computer Engineering Electives
    - 3 hours from:
      - CPE555 - SECURE SOFTWARE DEV (3)
      - CPE557 - SOFTWARE REVERSE ENGR (3)
      - CPE559 - SYSTEMS SECURITY (3)
      - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
  - Computer Science Electives
    - 3 hours from:
      - CS565 - NETWORK SECURITY (3)
      - CS580 - MOBILE DIGITAL FORENSICS (3)
      - CS588 - INTRO TO BIG DATA COMPUTING (3)
      - CS640 - MACHINE LEARNING (3)
      - CS641 - DATA MINING (3)
      - CS681 - MALWARE ANALYSIS (3)

Grand Total Credits: **15**

## **Cybersecurity (MS)**

### **Program Description**

The MS in Cybersecurity - Computer Engineering Track is a great choice for anyone who wants to specialize in cybersecurity and learn how to protect computer systems from cyber threats. The program provides students with the knowledge and skills needed to design and implement secure systems and networks. It also prepares students for leadership roles in the field of cybersecurity. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### **Number of Credit Hours**

30



## **Degree Requirements**

### Degree Requirements

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- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
- Direct admission to the computer engineering track requires that a student hold an ABET-accredited Bachelor's degree in computer science or computer engineering. All potential applicants must demonstrate proficiency in the following foundation coursework.
  - - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)
    - CPE434 - OPERATING SYSTEMS (3)

## **Major Requirements**

### Cybersecurity Core Courses

9 Total Credits

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- Complete all of the following
  - 3 hours from:
    - IS550 - CYBERSECURITY MANAGEMENT (3)
  - 3 hours from:
    - IS663 - COMPUTER FORENSICS (3)
    - CS580 - MOBILE DIGITAL FORENSICS (3)
- Capstone
  - Complete all of the following
    - 3 hours from:
      - CPE692 - CYBERSECURITY CAPSTONE (3)

- Should be taken toward the end of the student's program. Students must earn a grade of B or better in the capstone course.

#### Computer Engineering Track Required Courses

12 Total Credits

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- 12 hours from:
  - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
  - CPE645 - APPLIED CRYPTOGRAPHY (3)
  - CPE646 - WIRELESS SENSOR NETWORKS (3)
  - CPE649 - ADV CYBERSECURITY ENGINEERING (3)

#### Electives

9 Total Credits

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- Complete all of the following
  - 9 hours from:
    - CPE534 - OPERATING SYSTEMS (3)
    - CPE647 - UBIQUITOUS COMPUTING (3)
    - CS553 - CLIENT/SERVER ARCHITECTURES (3)
    - CS617 - DES & ANALY OF ALGORITHM (3)
    - CPE648 - ADVANCED COMPUTER NETWORKS (3)
    - CS565 - NETWORK SECURITY (3)
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS670 - WIRELESS SENSOR NETWORKS (3)
    - CS685 - APPLIED CRYPTOGRAPHY (3)
    - CS687 - DATABASE SYSTEMS (3)
    - CS690 - ADVANCED OPERATING SYSTEMS (3)
    - IS560 - NETWORKING & IT INFRASTRUCTURE (3)
    - IS571 - BUSINESS ANALYTICS & AI (3)
    - IS577 - NETWORK DEFENSE & SECURITY (3)
    - IS640 - DATA MGT AND DATA MINING (3)
    - IS670 - BUSINESS CONTINGENCY PLANNING (3)
    - IS691 - INFORMATION SYS STRATEGY & APP (3)
    - CPE555 - SECURE SOFTWARE DEV (3)
    - CPE557 - SOFTWARE REVERSE ENGR (3)
    - CPE559 - SYSTEMS SECURITY (3)
    - CPE590 - SPECIAL TOPICS IN COMP ENGR (1 - 3)
    - CPE690 - SELECTED TOPICS COMPUTER ENGRG (1 - 6)
    - CS595 - INDEPENDENT STUDY (3)
    - CS596 - SPECIAL TOPICS (3)
    - CS695 - INDEPENDENT STUDY (3)
    - CS696 - SELECTED TOPICS IN CS (3)
    - CS795 - INDEPENDENT STUDY (3)
    - CS796 - ADVANCED SELECTED TOPICS (3)

#### Restrictions on Elective Courses

- Complete all of the following
  - Computer Engineering track students should take at least one elective course from CPE courses.
  - Students can take only one course between these courses. CS 670 and IS 560 CS 685 and CPE 645 CS 670 and CPE 646 CS 687 and IS 640
  - At least half of the credit hours must be completed in courses numbered 600 or higher.
  - At least half of the credit hours must be CPE courses.
  - CPE 590, 690, CS 595, 596, 597, 598, 695, 696, 795, and 796 should be cybersecurity-related and require approval of advisor and approval of course instructor.

Grand Total Credits: **30**

## **Cybersecurity (Undergraduate Certificate)**

### **Number of Credit Hours**

12

### **Major Requirements**

- Complete all of the following  
Core Requirements
  - Complete all of the following
    - 3 hours from:
      - CS370 - INTRO COMPUTER NETWORKS (3)
      - CPE348 - INTRO TO COMPUTER NETWORKS (3)
    - 3 hours from:
      - CS485 - INTRO CYBERSECURITY ENGR (3)
      - CPE449 - INTRO TO CYBERSECURITY ENGINRG (3)
- Computer Engineering Electives
  - 3 hours from:
    - CPE455 - SECURE SOFTWARE DEVELOPMENT (3)
    - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
    - CPE459 - SYSTEMS SECURITY (3)
- Computer Science Electives
  - 3 hours from:
    - CS465 - NETWORK SECURITY (3)
    - CS480 - MOBILE DIGITAL FORENSICS (3)
    - CS488 - INTRO TO BIG DATA COMPUTING (3)

Grand Total Credits: **12**

## **Electrical Engineering (BSEE)**

### **Program Description**

The BSEE in Electrical Engineering enables students to pursue careers in any of the many diverse facets of electrical engineering such as electronics, networks, power systems, instrumentation, communications, and controls. Electrical engineering majors develop a broad set of foundational knowledge in mathematics, electromagnetism, electrical circuits and systems, electronic materials and signals. This knowledge is applied to junior and senior-level courses and electives that focus on design, analysis, and testing. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### **Number of Credit Hours**

129

## **Degree Requirements**

### Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Literature
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:

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Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

*keyboard\_arrow\_up*

Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

22 Total Credits

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- 22 hours from:
  - MA172 - CALCULUS II (4)
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH116 - GENERAL PHYSICS LAB III (1)

Grand Total Credits: **22**

### **Major Requirements**

Engineering

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR299 - ENGINEERING MENTORING I
  - EGR399 - ENGINEERING MENTORING II

Electrical Engineering

52 Total Credits

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- Complete all of the following
  - Earn a minimum grade of C- in all of the following:
    - EE202 - INTRO DIGITAL LOGIC DSGN (3)
    - EE203 - DIGITAL LOGIC DESIGN LAB (1)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - CPE211L - LABORATORY
    - CPE221 - COMPUTER ORGANIZATION (3)
    - EE223 - DES & MOD ELEC CIR & SYS (3)
    - EE307 - ELECTRICITY & MAGNETISM (3)

- EE308 - ELECTROMAGNETIC ENGR (3)
- EE310 - SOLID STATE FUNDAMENTALS (3)
- EE315 - INTRO ELECTRONIC ANALYSIS & DESIGN (3)
- ISE321 - ENGINEERING ECONOMY (3)
- CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
- EE382 - ANALYSIS METHOD CONTINUOUS TIME SYS (3)
- EE383 - ANALYSIS METHOD MULTIVARIABLE (3)
- EE385 - RANDOM SIGNALS & NOISE (3)
- EE386 - INTRO CONTROL/ROBOTIC SYS (3)
- EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)
- 6 hours from:
  - EE316 - ELE CIRCUITS & ELTRNC DSGN LAB (1)
  - CPE325 - EMBEDDED SYSTEMS LAB (1)
  - EE384 - DIG SIGNAL PROCESS LAB (1)
  - EE494 - EE DESIGN PROJECTS (3)

#### Engineering Technology Exclusion

0 Total Credits

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- No Engineering Technology (ET) classes may be used to satisfy any Electrical Engineering requirement.

#### Track Electives

6 Total Credits

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- Complete 1 of the following
  - Communications/Radar
    - 6 hours from:
      - EE414 - ANALOG & DIGITAL FILTER DESIGN (3)
      - EE421 - ANTENNA DESIGN & ANALYSIS (3)
      - EE424 - INTRO DATA COMMUN NETWORKS (3)
      - EE426 - COMMUNICATION THEORY (3)
      - Course Not Found
      - EE454 - OPTICAL FIBER COMMUNICATIONS (3)
  - Controls and Robotics
    - Complete all of the following
      - 6 hours from:
        - EE418 - NONLINEAR DYNAMICS & CHAOS (3)
        - EE486 - INTRO MODERN CONTROL SYSTEMS (3)
        - EE410 - SELECTED TOPICS/ECE (1 - 6)
      - Topics covered in EE 410 for this track are Fundamentals of Robotics and Introduction to Sensors & Actuators. EE 410 can be taken more than once if the topics are different.
  - Digital Hardware Design
    - Complete all of the following
      - 6 hours from:
        - CPE322 - DIGITAL HDWR DESIGN FUNDMNTLS (3)
        - CPE324 - ADV LOGIC DESIGN LABORATORY (1)
        - CPE427 - VLSI DESIGN I (3)
        - CPE431 - INTRO COMPUTER ARCHITECTURE (3)
      - CPE 322 and CPE 324 are corequisite for each other.
  - Network/Cybersecurity
    - 6 hours from:
      - CPE348 - INTRO TO COMPUTER NETWORKS (3)
      - CPE449 - INTRO TO CYBERSECURITY ENGINEERING (3)
  - Electronics
    - 6 hours from:
      - EE414 - ANALOG & DIGITAL FILTER DESIGN (3)
      - EE416 - ELECTRONICS II (3)
      - EE417 - PHOTOVOLTAIC FUNDAMENTALS (3)
      - EE418 - NONLINEAR DYNAMICS & CHAOS (3)



- EE436 - DIGITAL ELECTRONICS (3)
- EE451 - OPTOELECTRONICS (3)

Optics

- 6 hours from:
  - EE451 - OPTOELECTRONICS (3)
  - EE453 - LASER SYSTEMS (3)
  - EE454 - OPTICAL FIBER COMMUNICATIONS (3)

Energy and Power Systems

- Complete all of the following
  - 6 hours from:
    - EE410 - SELECTED TOPICS/ECE (1 - 6)
    - EE411 - ELECTRIC POWER SYSTEM (3)
    - EE417 - PHOTOVOLTAIC FUNDAMENTALS (3)
  - The topic covered in EE 410 for this track is Power System Insulators. EE 410 can be taken more than once if the topics are different.

300+ Electives

6 Total Credits

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- Complete all of the following
  - 6 hours from the following:
    - 300+ Level Courses Approved by Advisor
  - No Engineering Technology (ET) classes may be used to satisfy this requirement.

Technical Electives

3 Total Credits

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- 3 hours from the following:
  - 200+ Science or Engineering Course Approved by Advisor

Grand Total Credits: **71**

#### **4-Year Plan**

Year 1

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No Rules

Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earned at least 1 of the following:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

- MA172 - CALCULUS II (4)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 6 Hours Area II or IV Charger Foundations Courses

Year 2

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No Rules

Fall

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- 17 hours from:
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - MA201 - CALCULUS III (4)
  - EGR299 - ENGINEERING MENTORING I
  - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
  - CPE211L - LABORATORY
  - EE202 - INTRO DIGITAL LOGIC DSGN (3)
  - EE215 - ELECTRICAL CIRCUITS ANALYSIS (3)

Spring

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- 17 hours from:
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - EE223 - DES & MOD ELEC CIR & SYS (3)
  - CPE221 - COMPUTER ORGANIZATION (3)
  - EE203 - DIGITAL LOGIC DESIGN LAB (1)

Year 3

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No Rules

Fall

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- 16 hours from:
  - EE310 - SOLID STATE FUNDAMENTALS (3)
  - EE307 - ELECTRICITY & MAGNETISM (3)
  - EE307 - ELECTRICITY & MAGNETISM (3)
  - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)
  - EGR399 - ENGINEERING MENTORING II
  - CPE323 - INTRO TO EMBEDDED COMPUTER SYS (3)
  - CPE325 - EMBEDDED SYSTEMS LAB (1)

Spring

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- Complete all of the following
  - 3 Hours Area II or IV Charger Foundations Course
  - 13 hours from:
    - EE308 - ELECTROMAGNETIC ENGR (3)
    - EE383 - ANALY METH MULTIVARIABLE (3)
    - EE386 - INTRO CONTROL/ROBOTIC SYS (3)
    - EE385 - RANDOM SIGNALS & NOISE (3)
    - EE316 - ELE CIRCUITS & ELTRNC DSGN LAB (1)

Year 4

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No Rules

Fall

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- Complete all of the following
  - 3 hours from:
    - ISE321 - ENGINEERING ECONOMY (3)
  - Track 1 EE Elective Course (for a list see Major Requirements section)
  - 3 Hours EE Elective (300+ ECE Course)
  - 3 Hours Technical Elective (200+ Approved by Advisor)
  - 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 4 hours from:
    - EE384 - DIG SIGNAL PROCESS LAB (1)
    - EE494 - EE DESIGN PROJECTS (3)
  - 3 Hours EE Elective (300+ ECE Course)
  - Track 2 EE Elective Course (for a list see Major Requirements section)
  - 6 Hours Area II or IV Charger Foundations Courses

## **Electrical Engineering (BSEE) - Electrical Engineering, General (Concentration)**

### **Description**

The BSEE in Electrical Engineering with a General concentration is the path for students pursuing the degree without also pursuing concentration in optics & photonics technology. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Electrical Engineering (BSEE) - JUMP: BSEE, Computer Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSEE in Electrical Engineering to an MSE in Computer Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

JUMP Launcher

## **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Approved Master's Program**

Computer Engineering (MSE)

## **Max Shared Hours**

9

## **Minimum GPA**

3.5

## **JUMP Launch (Undergraduate Program)**

JUMP\_EE@uah.edu

## **JUMP Landing (Graduate Program)**

MSE\_Computer@uah.edu

## **Electrical Engineering (BSEE) - JUMP: BSEE, Electrical Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSEE in Electrical Engineering to an MSE in Electrical Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Electrical Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_EE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Electrical@uah.edu

## **Electrical Engineering (BSEE) - Optics and Photonics Technology (Concentration)**

### **Description**

The BSEE in Electrical Engineering with a concentration in Optics and Photonics Technology provides students with specialized training in the use of optical and photonics devices and systems for industries including telecommunications, optical materials and sensing, satellite design, and medical imaging. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Electrical Engineering (MSE)**

### **Program Description**

The MSE in Electrical Engineering is a great choice for students to build on their BSEE and learn how to design and develop electrical systems. The program provides students with the knowledge and skills needed to design and implement electrical systems and networks. It also prepares students for leadership roles in the field of electrical engineering. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### **Number of Credit Hours**

30

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.
- Graduate School Masters Requirements
  - Complete all of the following
    - Master's Transfer Credits
      - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
    - Complete 1 of the following
      - Non-Thesis
        - 30 semester hours of graduate coursework.
      - Thesis
        - Complete all of the following
          - 24 semester hours of graduate course work
          - 6 credit hours of thesis coursework (699)
          - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
          - A thesis approved by the supervisory committee.
- Engineering Graduate Degree Requirements
  - A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
- ECE Graduate Requirements
  - At least 50% of coursework (non-dissertation/thesis courses taken at UAH) must be ECE courses

## **Major Requirements**

Requirements

24 Total Credits

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- Complete all of the following
  - EE Major
    - 12 hours from the following:  
related graduate-level courses in an EE subject area
  - Math Minor
    - Complete all of the following
      - 6 hours from the following:  
coursework with mathematical or theoretical foundation.
      - Students may take two graduate level mathematics courses or EE 629 and EE 630
  - Engineering Area of Specialization Minor
    - Complete all of the following
      - 6 hours from the following:  
a 2-course sequence from engineering, or computer science
      - At least one of those courses should be at the 600 level.

Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - EE699 - MASTER'S THESIS (0 - 9)
  - Plan II: Non-Thesis
    - 6 hours from the following:  
graduate coursework to complete an approved extended program of study

Grand Total Credits: **30**

## **Electrical Engineering (MSE) - Electrical Engineering, General (Concentration)**

### **Description**

The MSE in Electrical Engineering with a General concentration is the path for students pursuing the degree without also pursuing a concentration in optics and photonics technology, or opto-electronics. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Electrical Engineering (MSE) - Optics and Photonics Technology (Concentration)**

### **Description**

The MSE in Electrical Engineering with a concentration in Optics and Photonics Technology provides students with the knowledge and skills to design, develop, and apply optical and photonic technologies in a wide range of fields, including telecommunications, biomedicine, energy, and manufacturing. The program is designed to prepare students for careers in research and development, engineering, and management. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Electrical Engineering (MSE) - Opto-Electronics (Concentration)**

### **Description**

The MSE in Electrical Engineering with a concentration in Opto-electronics provides students with the knowledge and skills to design, develop, and apply opto-electronic technologies in a wide range of fields. Graduates can work in the areas of telecommunications, biomedicine, energy, and manufacturing. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Electrical Engineering (PhD)**

### **Program Description**

The PhD in Electrical Engineering is one of the most desired as well as globally recognized degrees. It provides students with an opportunity to explore electrical engineering in a deeper manner and formulate a thorough well-written dissertation. Graduates are likely to be offered lucrative salaries as they possess expert insight which is fundamental to research centers. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

### **Number of Credit Hours**

66

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

#### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

#### ECE Graduate Requirements

- At least 50% of coursework (non-dissertation/thesis courses taken at UAH) must be ECE courses



## **Major Requirements**

EE Major

18 Total Credits

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- 18 hours from the following:  
approved related coursework in Electrical Engineering

Math Minor

12 Total Credits

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Math Minor

- Complete 1 of the following
  - Option 1
    - 12 hours from the following:  
approved graduate level mathematics courses
  - Option 2
    - Complete all of the following
      - 6 hours from the following:  
approved graduate level mathematics courses  
Sequence Options
      - Complete 1 of the following
        - 6 hours from:
          - EE629 - ANAL & COMP METH IN ELEC ENG I (3)
          - EE630 - ANAL & COMP METHODS ELEC EG II (3)
        - 6 hours from:
          - PH607 - MATHEMATICAL METHODS I (3)
          - PH609 - MATHEMATICAL METHODS II (3)

Engineering or Computer Science Area of Specialization Minor

12 Total Credits

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- 12 hours from the following:  
approved coursework in engineering or computer science

Supporting Coursework

6 Total Credits

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- 6 hours from the following:  
approved graduate level ECE coursework

Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - EE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **Industrial & Systems Engineering (BSISE)**

## **Program Description**

The BSISE in Industrial & Systems Engineering prepares students to optimize complex processes or systems. Graduates have skills in the development, improvement, implementation and evaluation of integrated systems of people, money, knowledge, information, equipment, energy, materials, analysis and synthesis, as well as the mathematical, physical, and social sciences together with the principles and methods of engineering design to specify, predict, and evaluate the results to be obtained from such systems or processes. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/iseem>.

## **Number of Credit Hours**

127

## **Degree Requirements**

Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)

- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:
 

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)

- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area IV: History, Social and Behavioral Sciences - World
    - HY103 - WORLD HISTORY TO 1500 (3)
    - HY104 - WORLD HISTORY SINCE 1500 (3)
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  - Area IV: History, Social and Behavioral Sciences -US
    - HY221 - UNITED STATES TO 1877 (3)
    - HY222 - UNITED STATES SINCE 1877 (3)
  - keyboard\_arrow\_up*
  - Area IV - History, Social and Behavioral Sciences - SBS
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)
    - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
    - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
    - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
    - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
    - PSC260 - INTRO INTERNTL RELATIONS (3)
    - PY101 - GENERAL PSYCHOLOGY I (3)
    - PY201 - LIFE-SPAN DEVELOPMENT (3)
    - SOC100 - INTRO TO SOCIOLOGY (3)
    - SOC103 - INTRO TO CRIMINOLOGY (3)
    - ECN142 - PRINC OF MACROECONOMICS (3)
    - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

18 Total Credits

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- 18 hours from:
  - MA172 - CALCULUS II (4)
  - MA201 - CALCULUS III (4)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

Grand Total Credits: **18**

### **Major Requirements**

Engineering

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR299 - ENGINEERING MENTORING I
  - EGR399 - ENGINEERING MENTORING II

Industrial & Systems Engineering

45 - 46 Total Credits

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- Complete 1 of the following  
Systems Engineering Track
  - Complete all of the following
    - 9 hours from:
      - ISE328 - INTRO SYSTEMS ENGINEERING (3)
      - ISE426 - DSGN & ANALY OF EXPERIM (3)
      - ISE480 - SYSTEMS ENGINEERING MODELING (3)
    - 3 hours of the following types:  
200+ Level Science or Engineering Course Approved by Advisor
    - Complete 1 of the following  
Aerospace Systems
      - Complete all of the following
        - 6 hours from:
          - MAE200 - PRINC AERONAUTICS & ASTRONAUTI (3)
          - MAE272 - DYNAMICS (3)
        - 3 hours from:
          - MAE330 - FUNDAMENTALS AERODYNAMICS (3)
          - MAE343 - COMPRESSIBLE AERODYNAMICS (3)Aerospace Systems
      - Complete all of the following
        - 6 hours from:
          - MAE200 - PRINC AERONAUTICS & ASTRONAUTI (3)
          - MAE272 - DYNAMICS (3)
        - 3 hours from:
          - MAE330 - FUNDAMENTALS AERODYNAMICS (3)
          - MAE343 - COMPRESSIBLE AERODYNAMICS (3)Mechanical Systems
      - 9 hours from:
        - MAE272 - DYNAMICS (3)
        - MAE284 - NUMERICAL METHODS (3)
        - MAE364 - KINEMATICS/DYNAM MACHINE (3)Computer Systems
      - 9 hours from:
        - EE202 - INTRO DIGITAL LOGIC DSGN (3)
        - CPE221 - COMPUTER ORGANIZATION (3)
        - CPE348 - INTRO TO COMPUTER NETWORKS (3)Control Systems
      - 9 hours from:
        - EE382 - ANALY METH CONTINUOUS TIME SYS (3)
        - EE383 - ANALY METH MULTIVARIABLE (3)

- EE386 - INTRO CONTROL/ROBOTIC SYS (3)

Industrial Engineering Track

- Complete all of the following
  - 9 hours from:
    - ISE423 - INTR STATISTICAL QUALITY CONTR (3)
    - ISE430 - MANUF SYS & FACILITIES DESIGN (3)
    - ISE433 - PROD & INVENTORY CONTROL SYS (3)
  - 3 hours of the following types:
    - 200+ Level Science or Engineering Course Approved by Advisor
  - 9 hours from:
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - ISE328 - INTRO SYSTEMS ENGINEERING (3)
    - ISE402 - INDUSTRIAL & ORGANIZA PSY (3)
    - ISE403 - HUMAN FACTORS PSYCHOLOGY (3)
    - ISE426 - DSGN & ANALY OF EXPERIM (3)
    - Course Not Found
    - ISE480 - SYSTEMS ENGINEERING MODELING (3)
  - May select a maximum of 6 hours from the following: EH 301, ACC 210, MGT 301, MKT 301, MGT 363, or MGT 462.

Grand Total Credits: **67 - 68**

#### 4-Year Plan

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earned at least 1 of the following:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Year 2

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Fall

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- 17 hours from:
  - MA201 - CALCULUS III (4)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - ISE390 - PROB & ENGR STATISTICS I (3)
  - ISE321 - ENGINEERING ECONOMY (3)
  - ISE224 - INTRO INDUSTRIAL & SYSTEMS (3)
  - EGR299 - ENGINEERING MENTORING I

Spring

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- Complete all of the following
  - 9 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - MAE271 - STATICS (3)
  - 2 hours from:
    - CE211 - CIVIL ENGINEERING GRAPHICS (2)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
    - MAE211 - INTRO COMPUTATIONAL TOOLS (2)
  - 3 hours from:
    - ISE391 - PROB/ENGR STAT II (3)
  - 3 Hours Area II or IV Charger Foundations Course

Year 3

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Fall

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- Complete all of the following
  - 13 hours from:
    - MAE341 - THERMODYNAMICS I (3)
    - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
    - MAE370 - MECHANICS OF MATERIALS (3)
    - MAE375 - MECHANICS OF MATERIALS LAB (1)
    - ISE340 - OPERATIONS RESEARCH (3)
  - 0 hours from:
    - EGR399 - ENGINEERING MENTORING II
  - 3 Hours Track Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - ISE324 - WORK DESIGN (3)
  - 3 hours from:
    - ISE327 - MANAGEMENT SYSTEMS ANALYSIS (3)
  - 3 Hours Area II or IV Charger Foundations Course
  - 3 Hours Science Elective
  - 3 Hours Track Elective



Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - ISE447 - INTRO TO SYSTEMS SIMULATION (3)
  - 3 hours from:
    - ISE428 - SYSTEMS ANALYSIS & DESIGN I (3)
  - 6 Hours Track Electives
  - 3 Hours Track Elective or Technical Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - ISE429 - SYS ANALYSIS/DESIGN II (3)
  - 6 Hours of Track Electives
  - 6 Hours Area II or IV Charger Foundations Courses

## **Industrial & Systems Engineering (BSISE) - JUMP: BSISE, Industrial & Systems Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSISE in Industrial & Systems Engineering to an MSE in Industrial & System Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **Approved Master's Program**

Industrial & Systems Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_ISE@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Industrial@uah.edu

## **Industrial & Systems Engineering (MSE)**

### **Program Description**

The MSE in Industrial and Systems Engineering provides students with a comprehensive skill set that qualifies them to break into industrial engineering or earn a promotion if they're already employed. It is designed for engineers and related technical professionals aspiring to achieve the highest levels of responsibility and leadership in the workplace and provides excellent preparation BSISE graduates who want to acquire substantial depth with respect to industrial engineering methods and the theory of the firm. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/iseem>.

### **Number of Credit Hours**

30

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

#### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## Industrial & Systems Engineering (MSE) - Engineering Management (Concentration)

### Description

The MSE in Industrial and Systems Engineering with a concentration in Engineering Management not only broadens your crucial management skills, but it also deepens your critical analytical, science and engineering talents. Engineering management professions will have the skills necessary to manage and succeed in today's complex work environments. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/iseem>.

### Concentration Requirements

Requirements

30 Total Credits

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- Complete all of the following

Core Courses

- 15 hours from:

- EM660 - ENGR MGMT THEORY (3)
- EM666 - ENGR PROJECT MANAGEMENT (3)
- EM747 - STRATEGIC ENGINEERING MGT (3)
- EM760 - ENGR MGMT STRUCTURES & SYSTEMS (3)
- ISE623 - ENGR ECON ANALYSIS (3)

Statistics and Optimization Courses

- Complete all of the following

- 3 hours from:

- ISE690 - STATISTICAL METHODS FOR ENGR (3)
- MSC600 - QUANTITATIVE METHODS (3)
- MSC615 - DECISION MODELING (3)

- 3 hours from:

- ISE526 - DESIGN/ANALY OF EXPERIMENT (3)
- ISE790 - ADV STATISTICAL APPLICATIONS (3)
- MSC641 - ADVANCED ANALYTICS (3)

Elective Courses

- 9 hours from the following:

can be chosen from a customized selection of qualifying graduate courses in Engineering, Science, or Business. These courses can be used to explore diverse areas of interest or clustered to provide depth in a secondary concentration such as supply chain management, aerospace systems, cybersecurity, or business analytics.

Grand Total Credits: **30**

## Industrial & Systems Engineering (MSE) - Industrial Engineering (Concentration)

### Description

The MSE in Industrial and System Engineering with a concentration in Industrial Engineering (IE) is designed for engineers and related technical professionals aspiring to achieve the highest levels of responsibility and leadership in the workplace. The field of IE uses mathematical, statistical, and scientific techniques to design, analyze, implement, and improve systems of people, information, and materials; often involving complex interactions between humans and machines. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/iseem>.

### Concentration Requirements

Requirements

24 Total Credits

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- Complete all of the following
  - Engineering Major
    - 12 hours from:
      - ISE623 - ENGR ECON ANALYSIS (3)
      - ISE626 - INTRO OPERATIONS RESEARCH (3)
      - ISE641 - ADVANCED QUALITY CONTROL (3)
      - ISE726 - SYSTEMS MODELING (3)
  - First Minor
    - 6 hours from the following:  
approved Engineering Management or Systems Engineering
  - Second Minor
    - Complete 1 of the following
      - 6 hours from:
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)
        - ISE526 - DESIGN/ANALY OF EXPERIMENT (3)
      - 6 hours from the following:  
graduate math/statistics

Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - ISE699 - MASTER'S THESIS (9)
  - Plan II: Non-Thesis
    - 6 hours from the following:  
graduate courses to complete an approved extended program of study

Grand Total Credits: **30**

## Industrial & Systems Engineering (MSE) - Systems Engineering (Concentration)

### Description

The MSE in Industrial and Systems Engineering with a concentration in Systems Engineering provides the unique education and insight into the standards and best practices required to solve challenges by managing people, systems, and technology effectively. A systems engineering concentration helps develop engineers into visionary leaders with an understanding of the entirety of a system. As a student you will gain the skillsets uniquely required of effective managers seeking to improve efficiency and effectiveness of an organization and its operations. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/iseem>.

### Concentration Requirements

Requirements

24 Total Credits

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- Complete all of the following  
Engineering Major
  - Complete all of the following
    - 9 hours from:
      - ISE580 - SYSTEMS ENGINEERING MODELING (3)
      - ISE623 - ENGR ECON ANALYSIS (3)
      - ISE627 - ENGINEERING SYSTEMS (3)
    - 3 hours from the following:  
approved Systems Engineering ISEEM electives
  - First Minor
    - 6 hours from the following:  
approved College of Engineering or College of Science graduate level coursework
  - Second Minor
    - Complete 1 of the following
      - 6 hours from:
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)
        - ISE526 - DESIGN/ANALY OF EXPERIMENT (3)
      - 6 hours from the following:  
graduate math/statistics

Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - ISE699 - MASTER'S THESIS (9)
  - Plan II: Non-Thesis
    - Complete all of the following
      - 3 hours from:
        - ISE726 - SYSTEMS MODELING (3)
      - 3 hours from the following:  
graduate courses to complete an approved extended program of study

Grand Total Credits: **30**

## **Industrial & Systems Engineering (PhD)**

### **Program Description**

The PhD in Industrial & Systems Engineering provides students with an opportunity to explore industrial and systems engineering in a deeper manner and formulate a thorough well-written dissertation. Candidates with a PhD in Industrial and Systems Engineering are likely to be offered lucrative salaries as they possess expert insight which is fundamental to research centers. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/iseem>.

### **Number of Credit Hours**

66

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

#### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Industrial & Systems Engineering (PhD) - Engineering Management (Concentration)**

### **Description**

A PhD in Industrial and Systems Engineering with a concentration in Engineering Management prepares students for careers in research and academia. The program provides students with the knowledge and skills to conduct original research in the field of Engineering Management and to teach at the university level. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/iseem>.

### **Concentration Requirements**

Engineering Major  
15 Total Credits  
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- Complete all of the following
  - Students not minoring in ISE may be required to take 9-12 semester hours of graduate ISE coursework to provide a basic knowledge of the discipline. This is at the discretion of the student's supervisory committee.
  - 15 hours from:
    - EM660 - ENGR MGMT THEORY (3)
    - EM666 - ENGR PROJECT MANAGEMENT (3)
    - EM747 - STRATEGIC ENGINEERING MGT (3)
    - EM760 - ENGR MGMT STRUCTURES & SYSTEMS (3)
    - ISE623 - ENGR ECON ANALYSIS (3)

#### Supporting Courses

12 Total Credits

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- Complete all of the following
  - 3 hours from:
    - EM761 - EVOL THRY ENG MGMT/IND SYS ENG (3)
  - 9 hours from the following:  
supporting graduate engineering coursework from the following areas: Industrial Engineering, Quality Engineering, Reliability Engineering, Systems Engineering, Operations Research, Simulation, Human Factors, or other approved areas

#### First Minor

9 Total Credits

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- 9 hours from the following:  
graduate engineering or business courses to add the necessary breadth and depth to the program of study, and to meet the student's professional goals and the department's standards of scholarship. Alternatively, the nine (9) hours may be arranged around a concentrated topic such as cybersecurity, aerospace, business analytics, supply chain management, or other topics approved by the candidate's committee.

#### Second Minor: Mathematics/Statistics

12 Total Credits

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##### Second Minor: Mathematics/Statistics

- Complete 1 of the following
  - Option 1
    - Complete all of the following
      - 6 hours from:
        - ISE526 - DESIGN/ANALY OF EXPERIMENT (3)
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)
      - 6 hours from the following:  
Math/Statistics electives
  - Option 2
    - 12 hours from the following:  
Math/Statistics electives

#### Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - EM799 - DOCTORAL DISSERTATION (9)

Grand Total Credits: **66**

## Industrial & Systems Engineering (PhD) - Industrial Engineering (Concentration)

**Description**

A PhD in Industrial and Systems Engineering with a concentration in Industrial Engineering prepares students for careers in research and academia. The program provides students with the knowledge and skills to conduct original research in the field of Industrial Systems and to teach at the university level. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/iseem>.



## **Concentration Requirements**

Engineering Major

18 Total Credits

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- 18 hours from:
  - ISE530 - MANUF SYS & FACILITIES DESIGN (3)
  - ISE547 - INTRO TO SYSTEMS SIMULATION (3)
  - ISE623 - ENGR ECON ANALYSIS (3)
  - ISE626 - INTRO OPERATIONS RESEARCH (3)
  - ISE641 - ADVANCED QUALITY CONTROL (3)
  - ISE726 - SYSTEMS MODELING (3)

Supporting Courses

12 Total Credits

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- 12 hours from:
  - ISE523 - INTR STATISTICAL QUALITY CONTR (3)
  - ISE627 - ENGINEERING SYSTEMS (3)
  - ISE734 - DECISION ANALYSIS (3)
  - ISE761 - EVOL THRY ENG MGMT/IND SYS ENG (3)

First Minor

6 Total Credits

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- 6 hours from the following:  
graduate coursework from the following areas: Industrial Eng, Quality Eng, Reliability Eng, Systems Simulation, Operations Research, Human Factors, or other approved areas.

Second Minor: Mathematics/Statistics

12 Total Credits

*keyboard\_arrow\_up*

Second Minor: Mathematics/Statistics

- Complete 1 of the following
  - Option 1
    - Complete all of the following
      - 6 hours from:
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)
        - ISE526 - DESIGN/ANALY OF EXPERIMENT (3)
      - 6 hours from the following:  
Math/Statistics electives
  - Option 2
    - 12 hours from the following:  
graduate math/statistic

Dissertation Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - ISE799 - DOCTORAL DISSERTATION (9)

Grand Total Credits: **66**

**Industrial & Systems Engineering (PhD) - Systems Engineering (Concentration)**

## **Description**

A PhD in Industrial and Systems Engineering with a concentration in Systems Engineering prepares students for careers in research and academia. The program provides students with the knowledge and skills to conduct original research in the field of Systems Engineering and to teach at the university level. For further information, please visit the department web site at <https://www.uah.edu/eng/departments/iseem>.

## **Concentration Requirements**

Engineering Major

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - ISE580 - SYSTEMS ENGINEERING MODELING (3)
    - ISE623 - ENGR ECON ANALYSIS (3)
    - ISE627 - ENGINEERING SYSTEMS (3)
    - ISE638 - ENGINEERING RELIABILITY (3)
    - ISE734 - DECISION ANALYSIS (3)
  - 6 hours from any ISE or EM 500 - 700 level course(s)

First Minor: Supporting Courses

15 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - ISE761 - EVOL THRY ENG MGMT/IND SYS ENG (3)
  - 12 hours from the following:  
approved College of Engineering or College of Science Department or as approved by the supervisory committee chair.

Second Minor: Mathematics/Statistics

12 Total Credits

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Second Minor: Mathematics/Statistics

- Complete 1 of the following
  - Option 1
    - Complete all of the following
      - 6 hours from:
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)
        - ISE526 - DESIGN/ANALY OF EXPERIMENT (3)
      - 6 hours from the following:  
graduate math/statistics
  - Option 2
    - 12 hours from the following:  
graduate math/statistics

Dissertation Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - ISE799 - DOCTORAL DISSERTATION (9)

Grand Total Credits: **66**

## **Materials Science (MS)**

### **Program Description**

The MS in Materials Science - Engineering Track provides an interdisciplinary approach to the education and enhancement of student skill sets so that they can participate in meaningful research that supports the research, education, policy, and manufacturing sectors. Students may receive their masters as a precursor to their doctoral program. Although a non-thesis option is available, students are encouraged to pursue the thesis option as it enhances the student's technical skill set, exposes them to new research opportunities and makes them more attractive to employers. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/materials-science>.

### **Number of Credit Hours**

33

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

#### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

### **Major Requirements**

- Complete all of the following
  - Earned at least 30 credits from: MS MTS
  - This is an interdisciplinary program. Please see MS MTS for requirements

Grand Total Credits: **30**

## **Materials Science (PhD)**

### **Program Description**

The PhD in Materials Science - Engineering track is part of a program offered jointly by the three University of Alabama system campuses. In this program, faculty members from various departments on each campus constitute the materials science faculty. Students pursue topics related to the science of materials, placing special emphasis on materials processing, the production of new materials, and on the application of materials to the needs of technology. For further information please refer to the department web site at <https://www.uah.edu/eng/departments/cme/programs/graduate>.

### **Number of Credit Hours**

66

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

#### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Mechanical Engineering (BSME)**

### **Program Description**

The BSME in Mechanical Engineering teaches students the principles of physics and materials science for design, analysis and manufacturing of mechanical and thermal systems. Graduates use core concepts: mechanics, kinematics, thermodynamics, and fluid mechanics and tools: computer-aided design and modeling to design and build machines, weapons, medical devices, and robotics. It is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/mae>.

### **Number of Credit Hours**

128

## **Degree Requirements**

### Degree Requirements

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- Bachelors Degree Requirements (Engineering)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

36 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

9 Total Credits

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- Charger Foundations (ENG) - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Fine Arts
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
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  - Area II: Humanities and Fine Arts - Literature
    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - keyboard\_arrow\_up*
  - Area II: Humanities and Fine Arts - Non-Literature
    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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  - Area II: Humanities and Fine Arts - WLC 101
    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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  - Area II: Humanities and Fine Arts - WLC 102
    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

12 Total Credits

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- Charger Foundations (ENG) - Area III
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

Area IV: History, Social, and Behavioral Sciences

9 Total Credits

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- Charger Foundations (ENG) - Area IV
  - Complete all of the following
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 3 hours from:

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Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)
    - 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

*keyboard\_arrow\_up*

Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **36**

### **Area V (Pre-Professional) Requirements**

Additional Mathematics and Science

21 Total Credits

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- Complete all of the following
  - 18 hours from:
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

Science Elective

- Complete 1 of the following
  - Earned at least 1 of the following:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - CH123 - GENERAL CHEMISTRY II (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
  - Any 300 or 400 Level Mathematics Course

Grand Total Credits: **21**

### **Major Requirements**

Engineering

4 Total Credits

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- 4 hours from:
  - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - EGR299 - ENGINEERING MENTORING I
  - EGR399 - ENGINEERING MENTORING II

Mechanical Engineering

61 Total Credits

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- 61 hours from:
  - MAE211 - INTRO COMPUTATIONAL TOOLS (2)



- EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
- MAE271 - STATICS (3)
- MAE272 - DYNAMICS (3)
- MAE284 - NUMERICAL METHODS (3)
- MAE284L - NUMERICAL METHODS LAB
- ISE321 - ENGINEERING ECONOMY (3)
- MAE310 - FLUID MECHANICS I (3)
- MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
- MAE311L - PRINC MEASUREMENT & INSTR LAB
- MAE341 - THERMODYNAMICS I (3)
- MAE342 - THERMODYNAMICS II (3)
- MAE364 - KINEMATICS/DYNAM MACHINE (3)
- MAE364L - KINEMATICS/DYN MACHINE LAB
- MAE370 - MECHANICS OF MATERIALS (3)
- MAE375 - MECHANICS OF MATERIALS LAB (1)
- MAE378 - MATERIALS & MFG PROCESS (3)
- MAE450 - INTRO TO HEAT & MASS TRANSFER (3)
- MAE451 - HEAT & MASS TRANSFER LAB (1)
- MAE455 - DESIGN OF THERMAL SYSTEMS (3)
- MAE466 - MECH & DSGN MACH ELEMENT (3)
- MAE488 - ANALY ENGINEERING SYSTEM (3)
- MAE489 - COMPUTER AIDED ENGR (3)
- MAE490 - SENIOR DESIGN I (3)
- MAE491 - SENIOR DESIGN II (3)

#### Technical Electives

6 Total Credits

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- Complete all of the following
  - ME students may not take both MA 385 AND ISE 390 for Technical Elective credit. ME students may not take MAE 330/331 for credit.
  - 6 hours from:
    - AST371 - INTRO TO ASTROPHYSICS (3)
    - CH331 - ORGANIC CHEMISTRY I (3)
    - CH332R - ORGANIC CHEM II RECITATION
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CE321 - INTRO TO TRANSPORTATION ENG (3)
    - CE372 - SOIL MECHANICS & FOUNDATION (3)
    - CE380 - CIVIL ENGINEERING MATERIALS (3)
    - CE381 - STRUCTURAL ANALYSIS I (3)
    - CE422 - TRAFFIC ENGINEERING DESIGN (3)
    - CE441 - HYDRAULIC ENGINEERING DESIGN (3)
    - CE449 - INTRO ENVIRONMENTAL ENGR (3)
    - CE456 - WATER QUALITY CONTROL PROC (3)
    - CE457 - HYDROLOGY (3)
    - CE481 - STRUCTURAL ANALYSIS II (3)
    - CE484 - STEEL DESIGN (3)
    - EE307 - ELECTRICITY & MAGNETISM (3)
    - EE308 - ELECTROMAGNETIC ENGR (3)
    - EE310 - SOLID STATE FUNDAMENTALS (3)
    - EE315 - INTRO ELECTRONIC ANALYS & DESGN (3)
    - EE382 - ANALY METH CONTINUOUS TIME SYS (3)
    - EE383 - ANALY METH MULTIVARIABLE (3)
    - EE385 - RANDOM SIGNALS & NOISE (3)
    - EE386 - INTRO CONTROL/ROBOTIC SYS (3)
    - ISE327 - MANAGEMENT SYSTEMS ANALYSIS (3)
    - ISE328 - INTRO SYSTEMS ENGINEERING (3)
    - ISE340 - OPERATIONS RESEARCH (3)
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - ISE391 - PROB/ENGR STAT II (3)
    - MA301 - INTRO ELEMENTARY NUMBER THEORY (3)
    - MAE330 - FUNDAMENTALS AERODYNAMICS (3)

- MA385 - INTRO TO PROBABILITY & STATIST (3)
- MA420 - INTERM DIFFERENTIAL EQUATIONS (3)
- MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
- MA452 - INTRO TO REAL ANALYSIS (3)
- MA453 - INTRO TO COMPLEX ANALYSIS (3)
- MA456 - METHODS OF PARTIAL DIFF EQUA (3)
- MA458 - APPLIED LINEAR ALGEBRA (3)
- MA460 - INTRO FOURIER ANALYSIS (3)
- MA465 - INTRO TO MATH MODELING (3)
- MA487 - INTRO TO MATH STATISTICS (3)
- PH301 - INTERMEDIATE MECHANICS (3)

Grand Total Credits: **71**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 8 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - 3 hours from:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - Earned at least 1 of the following:
    - FYE101E - CHARGER SUCCESS - ENGINEERING (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 6 Hours Area II or IV Charger Foundations Courses

Year 2

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Fall

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- 16 hours from:
  - MA201 - CALCULUS III (4)
  - PH112 - GEN PHYSICS W/CALC II (3)

- PH115 - GENERAL PHYSICS LAB II (1)
- MA244 - INTRO TO LINEAR ALGEBRA (3)
- MAE271 - STATICS (3)
- MAE211 - INTRO COMPUTATIONAL TOOLS (2)
- EGR299 - ENGINEERING MENTORING I

Spring

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- Complete all of the following
  - 9 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MAE272 - DYNAMICS (3)
    - MAE284 - NUMERICAL METHODS (3)
    - MAE284L - NUMERICAL METHODS LAB
  - 3 hours from:
    - ISE321 - ENGINEERING ECONOMY (3)
  - 3 Hours Area II or IV Charger Foundations Course
  - 3 Hours Science Elective

Year 3

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Fall

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- Complete all of the following
  - 6 hours from:
    - MAE341 - THERMODYNAMICS I (3)
    - EE213 - ELECTRICAL CIRCUITS & SYSTEMS (3)
  - 7 hours from:
    - MAE370 - MECHANICS OF MATERIALS (3)
    - MAE375 - MECHANICS OF MATERIALS LAB (1)
    - MAE310 - FLUID MECHANICS I (3)
    - EGR399 - ENGINEERING MENTORING II
  - 3 Hours Area II or IV Charger Foundations Course

Spring

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- Complete all of the following
  - 12 hours from:
    - MAE342 - THERMODYNAMICS II (3)
    - MAE311 - PRIN MEASUREMENT & INSTRUMEN (3)
    - MAE311L - PRINC MEASUREMENT & INSTR LAB
    - MAE378 - MATERIALS & MFG PROCESS (3)
    - MAE364 - KINEMATICS/DYNAM MACHINE (3)
    - MAE364L - KINEMATICS/DYN MACHINE LAB
  - 3 Hours Area II or IV Charger Foundations Course

Year 4

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Fall

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- Complete all of the following
  - 13 hours from:

- MAE450 - INTRO TO HEAT & MASS TRANSFER (3)
- MAE451 - HEAT & MASS TRANSFER LAB (1)
- MAE489 - COMPUTER AIDED ENGR (3)
- MAE466 - MECH & DSGN MACH ELEMENT (3)
- MAE490 - SENIOR DESIGN I (3)
- 3 Hours Technical Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - MAE455 - DESIGN OF THERMAL SYSTEMS (3)
    - MAE488 - ANALY ENGINEERING SYSTEM (3)
  - 3 hours from:
    - MAE491 - SENIOR DESIGN II (3)
  - 3 Hours Technical Elective
  - 3 Hours Area II or IV Charger Foundations Course

## **Mechanical Engineering (BSME) - JUMP: BSME, Aerospace Systems Engineering (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSME in Mechanical Engineering to an MS in Aerospace Systems Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Aerospace Systems Engineering (MS)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_ME@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Aerospace@uah.edu

### **JUMP Admission Requirements**

- Minimum GPA of 3.25 for all attempts of MAE 272, MAE 284, MAE 310, MAE 341, and MAE 370

## **Mechanical Engineering (BSME) - JUMP: BSME, Mechanical Engineering (MSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BSME in Mechanical Engineering to an MSE in Mechanical Engineering is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Mechanical Engineering (MSE)

### **Max Shared Hours**

9

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_ME@uah.edu

### **JUMP Landing (Graduate Program)**

MSE\_Mechanical@uah.edu

### **JUMP Admission Requirements**

- Minimum GPA of 3.25 for all attempts of MAE 272, MAE 284, MAE 310, MAE 341, and MAE 370

## **Mechanical Engineering (MSE)**

## **Program Description**

The MS in Mechanical Engineering helps students increase their earning potential, grow alongside the engineering field, find a rewarding career, and prepares them to take advantage of new opportunities. It does this by immersing them in advanced topics in Mechanical Engineering and introducing students to various research projects conducted by MAE faculty. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/mae>.

## **Number of Credit Hours**

30

## **Degree Requirements**

- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
- With prior approval, up to nine semester hours of 500-level courses may be taken in fulfillment of the basic and specific program requirements.

## **Major Requirements**

Core Requirements

24 Total Credits

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- Complete all of the following
  - Engineering Major
    - 12 hours from the following:  
graduate courses including supporting engineering courses
  - First Minor
    - 6 hours from the following:  
graduate course in an approved engineering area of specialization
  - Second Minor
    - Complete all of the following
      - 3 hours from:
        - MAE692 - GRAD ENGR ANALYSIS I (3)
      - 3 hours from:
        - MAE623 - COMPUTATIONAL FLUID DYNAMICS I (3)
        - Course Not Found
        - Course Not Found
        - MAE671 - CONTINUUM MECHANICS (3)
        - MAE674 - FINITE ELEMENT ANALYSIS I (3)
        - MAE693 - GRAD ENGR ANALYSIS II (3)
        - MAE780 - THEORY OF ACOUSTICS (3)
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)

Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - MAE699 - MASTER'S THESIS (0 - 9)
  - Plan II: Non-Thesis
    - 6 hours from the following:  
graduate courses to complete an approved extended program of study

Grand Total Credits: **30**

## **Mechanical Engineering (PhD)**

### **Program Description**

The PhD in Mechanical Engineering provides students entree to senior-level positions and an edge in the job market. Graduates develop a specialty within mechanical engineering and conduct research. Research findings are published both in a dissertation and in archival periodicals. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/mae>.

### **Number of Credit Hours**

66



## **Degree Requirements**

- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### **Graduate School PhD Requirements**

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

### **Engineering Graduate Degree Requirements**

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.
- With prior approval, up to nine semester hours of 500-level courses may be taken in fulfillment of the basic and specific program requirements.

## **Major Requirements**

Requirements

48 Total Credits

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- Complete all of the following
  - Engineering Major
    - Complete all of the following
      - 27 hours from the following:
        - graduate coursework from MAE or related departments
        - With approval, a Master's Thesis may be counted 6 semester hours towards this total.
  - First Minor
    - 12 hours from the following:
      - graduate courses in an approved engineering area of specialization
  - Second Minor
    - Complete all of the following
      - 3 hours from:
        - MAE692 - GRAD ENGR ANALYSIS I (3)
      - 6 hours from:
        - MAE623 - COMPUTATIONAL FLUID DYNAMICS I (3)
        - Course Not Found
        - Course Not Found
        - MAE671 - CONTINUUM MECHANICS (3)
        - MAE674 - FINITE ELEMENT ANALYSIS I (3)
        - MAE693 - GRAD ENGR ANALYSIS II (3)
        - MAE780 - THEORY OF ACOUSTICS (3)
        - ISE690 - STATISTICAL METHODS FOR ENGR (3)

Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - MAE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **Operations Research (MSOR)**

### **Program Description**

The MSOR in Operations Research provides students with the knowledge and skills to apply mathematical and computational methods to solve complex problems in business, engineering, and other fields. The program is designed to prepare students for careers in research and development, engineering, and management. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/iseem>.

### **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements

- Complete all of the following
  - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
  - No grade of D or F may be counted toward a graduate degree.
  - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
  - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Major Requirements**

Engineering Major

12 Total Credits

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- Complete all of the following
  - 6 hours from:
    - ISE626 - INTRO OPERATIONS RESEARCH (3)
    - ISE726 - SYSTEMS MODELING (3)
  - 6 hours from:
    - ISE547 - INTRO TO SYSTEMS SIMULATION (3)
    - ISE638 - ENGINEERING RELIABILITY (3)
    - ISE734 - DECISION ANALYSIS (3)

First Minor

6 Total Credits

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- Complete all of the following
  - 6 hours from the following:
    - graduate courses in an approved engineering area of specialization
  - Choose from the following areas (courses are approved by advisor): Manufacturing Systems, Quality Engineering, Systems Engineering, Operations Research, Reliability Engineering, Systems Simulation, and Engineering Management

Second Minor

6 Total Credits

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- 6 hours from:
  - ISE690 - STATISTICAL METHODS FOR ENGR (3)
  - ISE526 - DESIGN/ANALY OF EXPERIMENT (3)

Plan Options

6 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - 6 hours from:
      - ISE699 - MASTER'S THESIS (9)
  - Plan II: Non-Thesis
    - 6 hours from the following:
      - graduate courses to complete an approved extended program of study

Grand Total Credits: **30**

## **Optical Science & Engineering (PhD)**

### **Program Description**

The PhD in Optical Science and Engineering is an interdisciplinary graduate program between the Colleges of Science and Engineering. Optics stands today as an area of major scientific and technological importance. It is not only an enabling technology for multi-discipline work but is also widely recognized as a discipline in its own right. Optics is central in communication technology, biotechnology, nanotechnology, information processing, storage, and display as well as in health care and life sciences, remote sensing, national defense and industrial manufacturing. For further information, please refer to the department web site at <https://www.uah.edu/eng/departments/ece>.

## **Number of Credit Hours**

66

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

### Engineering Graduate Degree Requirements

- A minimum grade of B must be attained in each engineering course in the student's program of study designated by a number less than 600.

## **Major Requirements**

Phase 1

19 Total Credits

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- Complete all of the following
  - New full-time students typically come into the OSE program via a one academic year teaching assistantship in the department of physics or in one of the engineering departments.
  - Core Courses
  - Complete all of the following
    - Earned at least 1 of the following:
      - PH541 - GEOMETRICAL OPTICS (3)
      - OSE541 - GEOMETRICAL OPTICS (3)
    - Earned at least 1 of the following:
      - PH542 - PHYSICAL OPTICS (3)
      - OSE542 - PHYSICAL OPTICS (3)
    - Earned at least 1 of the following:
      - PH632 - FOURIER OPTICS (3)
      - OSE632 - FOURIER OPTICS (3)
    - Earned at least 1 of the following:
      - PH645 - LASERS I (3)
      - OSE645 - LASERS (3)
    - Earned at least 1 of the following:
      - PH546 - RADIOMETRY, DETECTORS & SOURCE (3)
      - OSE546 - RADIOMETRY, DETECTORS & SOURCE (3)
    - Complete

- OSE654 - OPTICAL TESTING (3)
- OSE653 - OPTICAL TESTING LAB (1)
- To complete this phase and become eligible to continue, the student must pass the written Preliminary Examination (typically administered at the end of the spring semester) on the above topics. Only two attempts will be permitted. After successful completion of this phase, the student should have acquired the common optics background necessary for continuing in the doctoral program. It is the student's responsibility to seek out a dissertation advisor during this first year and complete a draft Program of Study. Once the Preliminary Examination has been passed, a graduate committee will be formed and a final Program of Study will be completed and submitted to the OSE Program Director for review. The Program of Study will then be submitted to the Graduate School for final approval.

## Phase II

29 Total Credits

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- Complete all of the following
  - Consists of completing coursework in the Program of Study. Much of this coursework will support the dissertation research to be conducted in Phase III. Credits earned toward a thesis based master's degree (including up to 9 hours of master's thesis) may be applied to the doctoral degree. Phase II is completed when the student has passed the Qualifying Examination which is prepared and administered by the student's graduate committee. This exam consists of both written and oral parts. Written questions are typically drawn from material covered in the courses listed on the Program of Study and may be written by any or all of the committee members. The student will be given a time limit for submitting the solutions (typically a week). The oral part of the exam consists of defending a proposal for dissertation research prepared by the student and distributed to the graduate committee at least two weeks prior to the exam. The proposal will demonstrate that the student is intimately familiar with the research to be done, that published research related to the proposal has been reviewed, and that the student has a clear understanding of how to proceed and can set realistic goals. If the student fails the Qualifying Examination, a second attempt will be scheduled. Only two attempts are allowed.
  - 29 hours from the following:
    - supporting graduate coursework

## Phase III

18 Total Credits

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- Complete all of the following
  - Consists of all experimental and/or theoretical work needed to complete the student's dissertation. These activities will be directly supervised by the student's advisor with input from the supervisory committee obtained during regular meetings. There must be at least two supervisory committee meetings with the student before the dissertation defense. Since the Ph.D. is a research degree, recipients must demonstrate the ability to perform independent original research and to clearly communicate this work both in written and oral formats. A paper on the dissertation research must have been submitted to a recognized refereed technical journal before the Final Examination, which consists of a public, oral presentation and defense of the dissertation.
  - 18 hours from:
    - PH799 - DOCTORAL DISSERTATION (3 - 9)
    - OSE799 - DOCTORAL DISSERTATION (3 - 9)

## Advisement

0 Total Credits

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- A student admitted to the program will schedule a meeting with the OSE Program Director for initial advisement and it is the student's responsibility to consult with all OSE faculty members in the intended area of specialization in order to arrive at a permanent advisor for dissertation research. A graduate supervisory committee will be assembled when the student has passed the Preliminary Examination and selected a research project. The committee will include an advisor and at least four other members. At least one of the committee members will be from a department other than the student's home department, which is typically Physics. The fifth member may also be from another university or outside any university as long as approval to serve has been granted by the School of Graduate Studies. The composition of the committee will follow the rules governing such committees as set forth by the

graduate school degree requirements. The graduate committee is charged with supervision and approval of the student's research and course of study leading to the completion of all requirements for the degree.

Grand Total Credits: **66**

## **Software Engineering (Graduate Certificate)**

### **Number of Credit Hours**

18

## **College of Nursing**

### **Nursing Adult Gerontology Acute Care (Graduate Certificate)**

#### **Number of Credit Hours**

24

#### **Major Requirements**

Program Prerequisites

0 Total Credits

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- Complete all of the following
  - - NUR605 - ADVANCED HLTH ASSESSMENT (3)
    - NUR606 - ADV PATHOPHYSIOLOGY (3)
    - NUR607 - PHARMACOLOGY IN ADV PRAC (3)
  - Or transfer equivalent(s) taken within last 2 years

Major Requirements

24 Total Credits

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- Complete
  - NUR620 - ADLT GER ACUTE CR NUR PRACT I (6)
  - NUR621 - ADLT GER ACUTE CR NUR PRACT II (6)
  - NUR622 - ADLT GER ACUTE CR NUR PRAC III (6)
  - NUR623 - ADLT GER ACUTE CR NUR PRAC IV (6)

Grand Total Credits: **24**

## **Nursing (BSN)**

### **Program Description**

The BSN in Nursing prepares students for the dynamic field of nursing where they are instrumental in patient care and positive medical outcomes. Students can obtain the BSN through one of the four concentrations available (described below). It is accredited by the Commission on Collegiate Nursing Education (<http://ccneaccreditation.org/>) For further information, please refer to the department website at <https://www.uah.edu/nursing/degree-programs/bsn>.

### **Number of Credit Hours**

126

## **Degree Requirements**

### Degree Requirements

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- BSN Degree Requirements
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 6 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Nursing prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
  - 3 hours from:

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#### Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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#### Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV

- Complete all of the following
  - 3 hours from:
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
  - 9 hours from:
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - keyboard\_arrow\_up*
    - Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

#### **Area V (Pre-Professional) Requirements**

- Complete all of the following
  - Complete
    - BYS214 - INFECTION & IMMUNITY (4)
    - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
    - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
    - NUR220 - HEALTH PROMOTION NUR MAJORS (3)
  - Earned at least 1 of the following:
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - PSC300 - INTRO SOCIAL SCIENCE STATISTIC (3)
  - Electives
    - Complete 1 of the following
      - Earned at least 1 of the following:
        - FYE101N - CHARGER SUCCESS - NURSING (1)
        - HON101 - INTRO TO HONORS RESEARCH (1)
      - 1 hours of the following types:
        - General Electives

Grand Total Credits: **19**

#### **4-Year Plan**

Year 1

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- 

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 2

*keyboard\_arrow\_up*

- 

Fall

*keyboard\_arrow\_up*

No Rules

Spring

*keyboard\_arrow\_up*

No Rules

Year 3

*keyboard\_arrow\_up*

- 

Fall

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- Complete

- NUR001 - NURSING TESTING BLOCK
- NUR301 - CONCEPTS IN NURSING (3)
- NUR303 - HEALTH ASSESSMENT (5)
- NUR303L - CLINICAL
- NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)
- NUR311 - CLINICAL CALCULATIONS (1)

Spring

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- Complete

- NUR001 - NURSING TESTING BLOCK
- NUR310 - PROFESSIONAL PRACTICE NURS I (6)
- NUR310L - CLINICAL
- NUR312 - GERO NURSING CARE (3)
- NUR321 - PHARMACOLOGY IN NURS (3)

Year 4

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- 

Fall

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- Complete

- NUR001 - NURSING TESTING BLOCK
- NUR305 - NUR PROC MENTAL HLTH/ILLNESS (4)
- NUR305L - CLINICAL
- NUR307 - INQRY TO EVIDNC BASED NURS PRC (3)
- NUR308 - NURS CARE ADULTS HLTH ALTERNES (8)
- NUR308L - CLINICAL

Spring

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- Complete

- NUR001 - NURSING TESTING BLOCK
- NUR401 - NURS CARE CRITICALLY ILL ADULT (5)
- NUR401L - CLINICAL
- NUR403 - MATERNAL INFANT NURSING (4)
- NUR403L - CLINICAL
- NUR404 - FAMILY-CENTER NUR CARE CHILDRE (4)
- NUR404L - CLINICAL

Summer

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- Complete
  - NUR405 - COMMUNITY HEALTH NURS (4)
  - NUR405L - CLINICAL EXPERIENCE
  - NUR407 - PROF PRACTICE IN NURSING II (8)
  - NUR407L - CLINICAL EXPERIENCE
  - NUR408 - PROF PRAC IN NURS III SEMINAR (2)

## **Nursing (BSN) - JUMP: BSN, Nursing (MSN)**

### **JUMP Program Description**

The Joint Undergraduate Masters Program (JUMP) is for individuals enrolled in the RN-BSN Nursing track. Students may take **select MSN** courses in place of BSN courses, thus shortening completion time to a master's degree. The number of hours that a student may count towards both the BSN and the MSN is 1) 6 hours for the MSN Nursing Administration concentration, 2) 9 hours for the MSN Nurse Education concentration, and 3) 12 hours for the MSN Nurse Practitioner concentration. Students who meet eligibility criteria begin graduate courses in their junior year. Additionally, graduate courses taken during undergraduate study are charged undergraduate tuition rates. For further information, please refer to the JUMP website <https://www.uah.edu/jump>.

## **JUMP Completion Requirements**

Nursing Administration MSN Concentration

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- 6 hours from:
  - NUR638 - INFORMATICS NRSE ADMINISTRATOR (3)
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)

Nurse Practitioner MSN Concentration

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- 12 hours from:
  - NUR500 - SPECIAL TOPICS (2 - 4)
  - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - NUR604 - ROLE DEVELOPMENT FOR APN (3)
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)

Nurse Education MSN Concentration

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- 9 hours from:
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)
  - NUR643 - FACULTY ROLE DEV IN NURSING (3)
  - NUR646 - INSTRUC TECH NURSING EDUC (3)

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

## **Approved Master's Program**

Nursing (MSN)

## **Max Shared Hours**

12

## **Minimum GPA**

3.5

## **JUMP Launch (Undergraduate Program)**

JUMP\_NUR@uah.edu

## **JUMP Landing (Graduate Program)**

MSN\_NUR@uah.edu

## **Nursing (BSN) - Nursing (Dual Degree Program) (Concentration)**

### **Description**

The BSN in Nursing with a Dual Degree concentration is a partnership between UAH, Calhoun Community College, and Motlow State Community College. It allows community college students to enroll in both the Associate Degree in Nursing Program and the BSN in Nursing, enabling students to complete the ADN and BSN simultaneously. Eligibility to take the NCLEX-RN is the responsibility of the community college. The BSN in Nursing is accredited by the Commission on Collegiate Nursing Education (<http://ccneaccreditation.org>). For further information, please refer to the department website at <https://www.uah.edu/nursing/degree-programs/adn-bsn-dual-nursing>.

### **Concentration Requirements**

- Complete all of the following
  - An example of Alabama Community College course listing
  - Complete all of the following
    - NUR 112 (CC) Fundamental Concepts of Nursing
    - NUR 113 (CC) Nursing Concepts I
    - NUR 114 (CC) Nursing Concepts II
    - NUR 115 (CC) Evidence Based Clinical Reasoning
    - NUR 211 (CC) Advanced Nursing Concepts
    - NUR 221 (CC) Advanced Evidence Based Clinical Reasoning
  - UAH Courses (all online)
  - Complete all of the following
    - 39 hours from:
      - NUR000 - NURSING-CREDIT BY VALIDATION (3 - 39)
    - Validation credit is awarded after successful completion of NUR 410
    - Complete
      - NUR339 - INFO MGMT IN HEALTHCARE (3)
      - NUR410 - TRANSITION INTO PROFESS ROLES (3)
      - NUR413 - LEADERSHIP PROF NURS PRACT (5)
      - NUR421 - AC CARE FOR PROFESSIONAL NURSE (3)
      - NUR422 - COMMUNITY HEALTH FOR PROF NURS (5)
      - NUR423 - EVID BASED PRACTICE PROFESS NU (5)
      - NUR429 - NURSING THEORY (4)

Grand Total Credits: **67**



## **Nursing (BSN) - Nursing Accelerated (Concentration)**

### **Description**

The BSN in Nursing with an Accelerated BSN Concentration is a 3-semester program for academically qualified and highly motivated individuals with a bachelor's degree or higher in another field who wish to earn a BSN degree. It uses the Student Nurse Apprentice program approved by the Alabama Board of Nursing, giving students one-on-one mentoring by a practicing nurse for one year and allows students to earn income as a Student Nurse Apprentice while meeting clinical requirements. Graduates are eligible to take the NCLEX-RN exam to become registered nurses. It is accredited by the Commission on Collegiate Nursing Education (<http://ccneaccreditation.org/>) and provides guaranteed job placement upon successful program completion and passing the NCLEX exam. For further information, please refer to the department website at <https://www.uah.edu/nursing/degree-programs/accelerated-bsn>

### **Concentration Requirements**

- Complete all of the following
  - Spring
    - 21 hours from:
      - NUA315 - CONCEPTS IN NURSING (3)
      - NUA325 - PATHO & PHARM I (4)
      - NUA335 - HEALTH ASSESSMENT (5)
      - NUA345 - FOUNDATIONS IN NURSING (6)
      - NUA320 - GERONTOLOGICAL NURSING (3)
  - Summer
    - Complete all of the following
      - 19 hours from:
        - NUA351 - EVIDENCE BASED NURSING (3)
        - NUA355 - PATHO & PHARM II (4)
        - NUA365 - COMMUNITY BEHAVIORAL HEALTH (4)
        - NUA375 - MEDICAL-SURGICAL NURSING (8)
      - 2 hours from the following:  
NUR Elective - Special Topic
  - Fall
    - 19 hours from:
      - NUA460 - COMPLEX CARE NURSING (5)
      - NUA470 - MATERNAL/PEDIATRIC NURSING (4)
      - NUA475 - LEADERSHIP IN NURSING (8)
      - NUA485 - INTEGRATED CONCEPTS (2)
  - General Electives
    - 6 hours from the following:  
General Electives

Grand Total Credits: **67**

## **Nursing (BSN) - Nursing, General (Concentration)**

### **Description**

The BSN in Nursing with a General concentration is a 5-semester program for those individuals without a prior degree who wish to become a professional nurse following a traditional undergraduate pathway. UAH students and transfer students are eligible for admission to this upper-division concentration. Graduates earn a BSN and are eligible to take the NCLEX-RN exam to become registered nurses. It is accredited by the Commission on Collegiate Nursing Education. (<http://ccneaccreditation.org/>). For further information, please refer to the department website at <https://www.uah.edu/nursing/degree-programs/bsn>.

### **Concentration Requirements**

- Complete
  - NUR001 - NURSING TESTING BLOCK
  - NUR301 - CONCEPTS IN NURSING (3)
  - NUR303 - HEALTH ASSESSMENT (5)
  - NUR303L - CLINICAL
  - NUR304 - APP PATHOPHYSIOLOGY LIFESPAN (3)
  - NUR305 - NUR PROC MENTAL HLTH/ILLNESS (4)
  - NUR305L - CLINICAL
  - NUR307 - INQRY TO EVIDNC BASED NURS PRC (3)
  - NUR308 - NURS CARE ADULTS HLTH ALTERNATNS (8)
  - NUR308L - CLINICAL
  - NUR310 - PROFESSIONAL PRACTICE NURS I (6)
  - NUR310L - CLINICAL
  - NUR311 - CLINICAL CALCULATIONS (1)
  - NUR312 - GERO NURSING CARE (3)
  - NUR312L - CLINICAL
  - NUR321 - PHARMACOLOGY IN NURS (3)
  - NUR401 - NURS CARE CRITICALLY ILL ADULT (5)
  - NUR401L - CLINICAL
  - NUR403 - MATERNAL INFANT NURSING (4)
  - NUR403L - CLINICAL
  - NUR404 - FAMILY-CENTER NUR CARE CHILDRE (4)
  - NUR404L - CLINICAL
  - NUR405 - COMMUNITY HEALTH NURS (4)
  - NUR405L - CLINICAL EXPERIENCE
  - NUR407 - PROF PRACTICE IN NURSING II (8)
  - NUR407L - CLINICAL EXPERIENCE
  - NUR408 - PROF PRAC IN NURS III SEMINAR (2)
  - FYE101N - CHARGER SUCCESS - NURSING (1)

Grand Total Credits: **67**

## **Nursing (BSN) - RN to BSN Nursing (Concentration)**

### **Description**

The BSN in Nursing with a RN to BSN concentration *is only for individuals who already have an Associate Degree in Nursing and a registered nurse license*. The program is accredited by the Commission on Collegiate Nursing Education. (<http://ccneaccreditation.org/>). Taught by the same nursing faculty who teach on campus, this program is only offered in a flexible, 100% online format that can be completed in as few as 12 months while still working and is designed to improve quality and safety in patient care and create real change in healthcare. For further information, please refer to the department website at <https://www.uah.edu/nursing/degree-programs/rn-to-bsn>.

### **Concentration Requirements**

- Complete all of the following
  - Complete
    - NUR339 - INFO MGMT IN HEALTHCARE (3)
    - NUR410 - TRANSITION INTO PROFESS ROLES (3)
    - NUR413 - LEADERSHIP PROF NURS PRACT (5)
    - NUR421 - AC CARE FOR PROFESSIONAL NURSE (3)
    - NUR422 - COMMUNITY HEALTH FOR PROF NURS (5)
    - NUR423 - EVID BASED PRACTICE PROFESS NU (5)
    - NUR429 - NURSING THEORY (4)
  - 39 hours from:
    - NUR000 - NURSING-CREDIT BY VALIDATION (3 - 39)
  - Validation hours are awarded after successful completion of NUR 410

Grand Total Credits: **67**

## **Nursing Education (Graduate Certificate) (Fully Online)**

### **Program Description**

The post-graduate certificate in Nursing Education prepares nurses to teach in post-secondary education and health care settings. Courses are open to current graduate students enrolled in any of the masters or doctoral tracks offered by the College of Nursing as well as to nurses already holding a master's degree in nursing. For further information, please refer to the department website at <https://www.uah.edu/nursing/online/nursing-education>

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

18

### **Major Requirements**

- Complete
  - NUR640 - CURRICULUM DEV IN NURSING (3)
  - NUR641 - TEACHING/LEARNING IN NURSING (3)
  - NUR642 - TESTING & EVALUATION IN NURS (3)
  - NUR643 - FACULTY ROLE DEV IN NURSING (3)
  - NUR644 - PRACTICUM IN TEACHING (3)
  - NUR646 - INSTRUC TECH NURSING EDUC (3)

Grand Total Credits: **18**

## **Nursing Family Nurse Practitioner (Graduate Certificate)**

### **Program Description**

The certificate in Nursing Family Nurse Practitioner gives students already possessing an MSN the opportunity to pursue a family nurse practitioner certificate. Students are admitted to the family nurse practitioner certificate program for the fall semester and complete the requirements in four semesters. After completing coursework, students are eligible to sit for national certification examinations. The Post-Master's Certificate in FNP is accredited by the Commission on Collegiate Nursing Education. For further information, please refer to the department website at <https://www.uah.edu/nursing/graduate-programs/fnp-certificate>

### **Number of Credit Hours**

24

### **Major Requirements**

Program Prerequisites

0 Total Credits

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- Complete all of the following
  - - NUR605 - ADVANCED HLTH ASSESSMENT (3)
    - NUR606 - ADV PATHOPHYSIOLOGY (3)
    - NUR607 - PHARMACOLOGY IN ADV PRAC (3)
  - Or transfer equivalent(s) taken within last 2 years

Major Requirements

24 Total Credits

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- Complete
  - NUR610 - FAMILY NURSE PRACTITIONER I (6)
  - NUR611 - FAM NURS PRACTITIONER II (6)
  - NUR612 - FAMILY NUR PRACTITIONER III (6)
  - NUR613 - FAM NURS PRACTITIONER IV (6)

Grand Total Credits: **24**

## **Nursing (MSN)**

### **Program Description**

The MSN in Nursing gives students with a BSN advanced training in nursing specialties through one of the four concentrations available (described below). It is accredited by the Commission on Collegiate Nursing Education (<http://ccneaccreditation.org/>) For further information, please refer to the department website at <https://www.uah.edu/nursing/degree-programs/msn>

### **Number of Credit Hours**

42

### **Degree Requirements**

Degree Requirements

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- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.
  - Graduate School Masters Requirements
    - Complete all of the following
      - Master's Transfer Credits
        - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
      - Complete 1 of the following
        - Non-Thesis
          - 30 semester hours of graduate coursework.
        - Thesis
          - Complete all of the following
            - 24 semester hours of graduate course work
            - 6 credit hours of thesis coursework (699)
            - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
            - A thesis approved by the supervisory committee.
  - A minimum grade of B- must be attained in each nursing course in the student's program of study.

## **Nursing (MSN) - Family Nurse Practitioner (Concentration)**

### **Description**

The MSN in Nursing with a concentration in Family Nurse Practitioner produces advanced practice nurses who are competent clinicians focused on managing health conditions and preventing disease for patients across the lifespan. These practitioners review medical histories, perform comprehensive and focused physical exams, order diagnostic tests, diagnose and develop individualized treatment plans. They practice in various settings, such as private practice, community health, health care systems, and universities. The MSN in Nursing is accredited by the Commission on Collegiate Nursing Education. For further information, please refer to the department website at <https://www.uah.edu/nursing/graduate-programs/msn/msn-fnp>

### **Concentration Requirements**

Core Requirements

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - 3 hours from any NUR 500 - 600 level course(s)

Track

36 Total Credits

*keyboard\_arrow\_up*

- 36 hours from:
  - NUR604 - ROLE DEVELOPMENT FOR APN (3)
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)
  - NUR605L - CLINICAL
  - NUR606 - ADV PATHOPHYSIOLOGY (3)
  - NUR607 - PHARMACOLOGY IN ADV PRAC (3)
  - NUR610 - FAMILY NURSE PRACTITIONER I (6)
  - NUR610L - CLINICAL
  - NUR611 - FAM NURS PRACTITIONER II (6)
  - NUR611L - CLINICAL EXPERIENCE
  - NUR612 - FAMILY NUR PRACTITIONER III (6)
  - NUR612L - CLINICAL EXPERIENCE
  - NUR613 - FAM NURS PRACTITIONER IV (6)
  - NUR613L - CLINICAL EXPERIENCE

Grand Total Credits: **42**

## **Nursing (MSN) - Nursing Administration (Concentration)**

### **Description**

The MSN in Nursing with a concentration in Nurse Administration prepares students for leadership in a broad range of healthcare environments including hospitals, community agencies, clinics, and outpatient treatment centers. Graduates of this program have expertise in communication and relationship building; knowledge of the healthcare environment with an emphasis on evidence-based practice, quality and safety, clinical practice design, and accreditation; leadership; professionalism; and business skills. The MSN in Nursing is accredited by the Commission on Collegiate Nursing Education. For further information, please refer to the department website at <https://online.uah.edu/degrees/nursing/msn-administration>

### **Concentration Requirements**

Core Requirements

5 Total Credits

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- 5 hours from:
  - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - NUR629 - US HEALTHCARE SYSTEM (2)

Track

25 Total Credits

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- 25 hours from:
  - NUR630 - FND CONCEPTS NURSING ADMINATOR (3)
  - NUR631 - LEADERSHIP HUMAN RESRC MGMT (3)
  - NUR632 - HEALTHCARE FINANCE & ECONOMICS (4)
  - NUR634 - INTERNSHIP IN NURS LEADERSHIP (3)
  - NUR634L - CLINICAL EXPERIENCE
  - NUR638 - INFORMATICS NRSE ADMINISTRATOR (3)
  - NUR647 - STRATEGIC PLANNING (3)
  - NUR648 - CONCEPTS OF HLTH ASSMNT & PROM (3)
  - NUR649 - QUALITY, SAFETY, & RISK MGMT (3)

Grand Total Credits: **30**

## **Nursing (MSN) - Nursing AGACNP (Concentration)**

### **Description**

The MSN in Nursing with a concentration in Adult-Gerontology Acute Care focuses on the care of all adults with acute illnesses and may practice in the hospital, hospital-based clinics, long-term care settings, and private practice. Graduates of this program provide expert interventions focused on patients who are physiologically unstable, technologically dependent, and highly vulnerable for complications, requiring frequent monitoring and intervention. They obtain medical histories, perform physical examinations, order screening and diagnostic tests, and provide pharmacological and non-pharmacological treatment. The MSN in Nursing is accredited by the Commission on Collegiate Nursing Education. For further information, please refer to the department website at <https://www.uah.edu/nursing/graduate-programs/msn/msn-acnp>

### **Concentration Requirements**

#### Core Requirements

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - 3 hours from any NUR 500 - 600 level course(s)

#### Track Requirements

36 Total Credits

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- 36 hours from:
  - NUR604 - ROLE DEVELOPMENT FOR APN (3)
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)
  - NUR606 - ADV PATHOPHYSIOLOGY (3)
  - NUR607 - PHARMACOLOGY IN ADV PRAC (3)
  - NUR620 - ADLT GER ACUTE CR NUR PRACT I (6)
  - NUR621 - ADLT GER ACUTE CR NUR PRACT II (6)
  - NUR622 - ADLT GER ACUTE CR NUR PRAC III (6)
  - NUR623 - ADLT GER ACUTE CR NUR PRAC IV (6)

Grand Total Credits: **42**



## **Nursing (MSN) - Nursing Education (Concentration)**

### **Description**

The MSN in Nursing with a concentration in Nursing Education prepares students to work in different settings including higher education, community colleges, technical schools, high schools, healthcare organizations, and corporations. Depending on the setting, the roles of nurse educators are to prepare students for careers in health care, entry into nursing practice, advanced education at the master's or doctoral levels, and support the practice excellence of registered nurses. Students in the Nursing Education concentration are prepared to be effective teachers in the classroom, clinical settings, and simulation laboratories. The MSN in Nursing is accredited by the Commission on Collegiate Nursing Education. For further information, please refer to the department website at <https://online.uah.edu/degrees/nursing>

### **Concentration Requirements**

Core Requirements

12 Total Credits

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- 12 hours from:
  - NUR602 - SCHOLARLY INQ ADV NUR PRAC (3)
  - NUR605 - ADVANCED HLTH ASSESSMENT (3)
  - NUR605L - CLINICAL
  - NUR606 - ADV PATHOPHYSIOLOGY (3)
  - NUR607 - PHARMACOLOGY IN ADV PRAC (3)

Track

21 Total Credits

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- 21 hours from:
  - NUR640 - CURRICULUM DEV IN NURSING (3)
  - NUR641 - TEACHING/LEARNING IN NURSING (3)
  - NUR642 - TESTING & EVALUATION IN NURS (3)
  - NUR643 - FACULTY ROLE DEV IN NURSING (3)
  - NUR644 - PRACTICUM IN TEACHING (3)
  - NUR646 - INSTRUC TECH NURSING EDUC (3)
  - NUR652 - CLINICAL PRACTICUM (3)

Grand Total Credits: **33**

## **Nursing Practice (DNP) (Fully Online)**

### **Program Description**

The DNP in Nursing Practice has two pathways, post-masters and post-bachelors. It provides advanced practice specialty education at the doctoral level to address the growing complexity of patient care and healthcare systems. Graduates of this program obtain competencies in population-based care, leadership, health policy, health system improvement, research, and evidence-based practice. The Doctor of Nursing Practice is accredited by the Commission on Collegiate Nursing Education. For further information, please refer to the department website at <https://www.uah.edu/nursing/graduate-programs/dnp>

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

40

## **Degree Requirements**

### Degree Requirements

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- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.
- A minimum grade of B is required in all courses.

## **Major Requirements**

Major Requirements

30 Total Credits

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- 30 hours from:
  - NUR700 - CLINICAL DATA MGT & ANALYSIS (3)
  - NUR701 - WRITING FOR PUBLICATION (3)
  - NUR729 - EVID BASED PRACT DESGN & TRANS (3)
  - NUR731 - PHIL/THEOR/CONC FOUN FOR APN (3)
  - NUR733 - INFORMATICS FOR APN (3)
  - NUR735 - POPULATION HEALTH IN APN (3)
  - NUR737 - INTDIS LDRSHP/ROLE DEV PRA EXC (3)
  - NUR740 - HLH POLIC/POLIT:IMPLICATION HC (3)
  - NUR742 - PROGRAM EVAL & METHODS (3)
  - NUR743 - EVID BASED PRACT STRATEGIES (3)

Clinical Requirements (Optional)

0 Total Credits

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- Complete all of the following
  - ■ NUR734 - ADVANCED EXPERIENTIAL CLINICAL (1 - 7)
  - Additional Clinical Hours. Please see advisor.

DNP Project

10 Total Credits

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- Complete all of the following
  - 3 hours from:
    - NUR738 - DNP PROJECT DEVELOPMENT (3)
  - 7 hours from:
    - NUR739 - DNP PROJECT (7)

Grand Total Credits: **40**

## **Nursing Science (PhD) (Fully Online)**

### **Program Description**

The PhD in Nursing Science prepares nurse scholars who will advance nursing science by generating new knowledge. It is a joint program between The University of Alabama in Huntsville (UAH) and The University of Alabama (UA). For further information, please refer to the department website at <https://www.uah.edu/nursing/graduate-programs/phd-nursing-science>

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

84

## **Degree Requirements**

### Degree Requirements

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- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.
- A minimum grade of B is required for all courses.
- Students must attend two (2) Joint PhD Intensives during their course of study.

## **Major Requirements**

Requirements

42 Total Credits

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- Complete all of the following
  - 39 hours from:
    - NUS750 - PHILOSOPHY OF SCIENCE (3)
    - NUS752 - INFORMATICS & ANALYTICS NUR SC (3)
    - NUS754 - ETHICAL CONDUCT LGL RESEARCH (3)
    - NUS756 - APPL OF THEORETICAL MODELS (3)
    - NUS758 - QUANTITATIVE RESEARCH METHODS (3)
    - NUS760 - STATISTICS I (3)
    - NUS762 - HLTH POLICY UNDERSERVED POPUL (3)
    - NUS764 - SCIENTIFIC WRITING (3)
    - NUS766 - EPIDEMIOLOGY RURAL POP (3)
    - NUS768 - STATISTICS II (3)
    - NUS770 - GRANT WRITING (3)
    - NUS772 - QUALITATIVE RESEARCH METHODS (3)
    - NUS776 - ADVANCED RESEARCH METHODS (3)
    - NUS798 - COMPETENCY ASSESSMENT

Additional Requirements for BSN to PhD Students Only

- 3 hours from:
  - NUS741 - BSN-PHD RESEARCH SEMINAR I (1)
  - NUS742 - BSN-PHD RESEARCH SEMINAR II (1)
  - NUS743 - BSN-PHD RESEARCH SEMINAR III (1)

Cognates

6 Total Credits

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- 6 hours from:
  - NUS780 - INTRODUCTION TO OMICS (3)
  - NUS781 - OMICS IN NURSING RESEARCH (3)
  - NUS782 - CURRIC DEV PROG EVL FOR NUR ED (3)
  - NUS783 - INSTR MTHD ASSESS IN NURS ED (3)
  - NUS784 - APPLD TECH HEALTHCARE RES (3)
  - NUS785 - R&D INNOV HEALTHCARE TECH (3)

Dissertation

18 Total Credits

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- 18 hours from:
  - NUS799 - DOCTORAL DISSERTATION (9)

Grand Total Credits: **66**

## **College of Science**

## **Astronomy and Astrophysics (Minor)**

### **Program Description**

The minor in Astronomy and Astrophysics is the most popular minor offered by the Physics and Astronomy Department. It gives students a good general overview of the universe and the laws that govern its behavior. For more information, please visit the college web site at <https://www.uah.edu/science/degree-programs/minors>

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - PH110 - FRONTIERS IN SCIENCE (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - AST106 - EXPLORING THE COSMOS I (4)
    - AST107 - EXPLORING THE COSMOS II (4)
    - AST371 - INTRO TO ASTROPHYSICS (3)
  - 3 hours from any AST, OPT, or PH 300 - 400 level course(s)

Grand Total Credits: **21**

## **Atmospheric & Earth Science (BS)**

### **Program Description**

The BS in Atmospheric & Earth Science provides students with knowledge and analytical skills in topics related to atmospheric chemistry, aerosols, clouds, climate, lightning, severe weather, radar, hydrology, geographic information systems, satellite remote sensing, land use, land cover change, public policy and environmental sustainability. Graduates will be well prepared to pursue a graduate degree or enter their selected career field. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Number of Credit Hours**

120

### **Degree Requirements**

Degree Requirements

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- BS Degree Requirements (COS)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

### **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

#### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

#### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:
 

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Area II: Humanities and Fine Arts - Non-Literature

      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)

- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)



- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)

- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)
- 8 hours from:  
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 Area III: Mathematics and Sciences - Sciences
  - AST100 - SURVEY OF ASTRONOMY (4)
  - AST106 - EXPLORING THE COSMOS I (4)
  - AST107 - EXPLORING THE COSMOS II (4)
  - BYS109 - FUNDAMENTALS OF BIOLOGY (4)
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
  - CH101 - INTRO TO CHEMISTRY (3)
  - CH105 - INTRO CHEMISTRY LAB (1)
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH121M - GENERAL CHEMISTRY I M (3)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
  - PH100 - CONCEPTUAL PHYSICS (4)
  - PH101 - GENERAL PHYSICS I (4)
  - PH102 - GENERAL PHYSICS II (4)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
    - Complete all of the following
      - 3 hours from:  
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 Area IV: History, Social and Behavioral Sciences - World
        - HY103 - WORLD HISTORY TO 1500 (3)
        - HY104 - WORLD HISTORY SINCE 1500 (3)
      - 3 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences -US
        - HY221 - UNITED STATES TO 1877 (3)
        - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:  
*keyboard\_arrow\_up*  
 Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - 3 hours from:  
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 Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
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 Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

### **Major Requirements**

AES Core

17 Total Credits

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- 17 hours from:
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES103L - LABORATORY
  - AES104 - WEATHER & CLIMATE CHANGE (4)
  - AES104L - LABORATORY
  - AES209 - DATA ANALYSIS TOOLS (2)
  - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
  - AES303 - CLASSICAL & PHYSICAL CAUSES CLIMATE (3)
  - AES498 - RESEARCH & PROF DEV CAPSTONE (1)

Grand Total Credits: **17**

## **Atmospheric & Earth Science (BS) - Atmospheric Science (Concentration)**

### **Description**

The BS in Atmospheric and Earth Science with a concentration in Atmospheric Science/Meteorology Atmospheric science is an interdisciplinary field that combines physics and chemistry to study the composition, structure and dynamics of Earth's atmosphere. Students learn about weather analysis and predictability, climate change, the circulation of the atmosphere relating to clouds, weather systems, and air quality and use observations, mathematical tools and computer models to describe the atmosphere and its impacts. Related careers include weather forecaster, radar/satellite imagery analyst, operational meteorologist, emergency manager, forensic meteorologist, climatologist, broadcast meteorologist, wildfire meteorologist, aviation forecaster, and air pollution analyst. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>

### **Concentration Requirements**

Area V (Pre-Professional)

34 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Chemistry
    - 4 hours from:
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
  - Computer Programming
    - 3 hours from:

- CS102 - INTRO TO C PROGRAMMING (3)
- CS103 - INTRO PROGRAMMING USING JAVA (3)
- CS104 - INTRO TO CS USING PYTHON (3)

#### Mathematics

- Complete all of the following
  - Complete
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - Based on Math placement, prerequisite MA 112 and/or MA 113 Mathematics courses may be required.

#### Applied Statistics

- Earned at least 1 of the following:
  - MA281 - ELEMENTS OF STATISTICAL ANALYS (3)
  - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - PSC300 - INTRO SOCIAL SCIENCE STATISTIC (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - SOC303 - STATISTICS/SOCIAL SCIENCES (3)

#### Physics Sequence

- Complete
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

### Concentration Requirements

33 Total Credits

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- Complete all of the following
  - Complete
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES212L - LABORATORY
    - AES341 - THERMODYNAMIC METEOROLOGY (3)
    - AES351 - DYNAMIC METEOROLOGY (3)
  - Earned at least 1 of the following:
    - AES321 - POLLUTION PROBLEMS (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
  - Earned at least 1 of the following:
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCI PROGRMNG FOR EARTH & ATMOS (3)

### Concentration Electives

17 Total Credits

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- Complete all of the following
  - 17 hours from:
    - AES305 - HYDROLOGY (3)
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
    - AES352 - SYNOPTIC METEOROLOGY (3)
    - AES402 - SCI & SOC ASPTS NATRL DISASTER (3)
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCI PROGRMNG FOR EARTH & ATMOS (3)
    - AES410 - OPERATIONAL WEATHER FORECAST'G (3)
    - AES414 - GEOSPATIAL APPLICATIONS (3)
    - AES420 - INTRO ATMOSP CHEM & AIR POLLU (3)

- AES441 - ATMOSP THERMODY & CLOUD PHYSIC (3)
- AES451 - ATMOSPHERIC FLUID DYNAMICS I (3)
- AES454 - FORECASTING MESOSCALE PROC (3)
- AES461 - ATMOSPHERIC RADIATION I (3)
- AES471 - RADAR METEOROLOGY (3)
- AES472 - SATELLITE METEOROLOGY (3)
- AES490 - SPEC TOPICS EARTH & ATMOSPH SC (1 - 3)
- AES495 - DIRECTED STUDY (2 - 4)
- AES497 - UNDERGRADUATE INTERNSHIP (3)
- AES499 - UNDERGRADUATE RESEARCH (2 - 4)
- at least 9 hours must be at the 400-level
- AES 313, AES 408, & AES 414 - Student may choose 2 of these 3 GIS tools courses to count in the Atmospheric Science/Meteorology Concentration Electives section.
- AES 495, AES 497, & AES 499 - Student may choose only one of these courses to count in the Atmospheric Science/Meteorology Concentration Electives section.
- AES 490 Special Topics course may count in the Atmospheric Science Concentration Electives section with department approval.
- AES 321, AES 370, AES 408, & AES 409 - Each of these courses can be used to satisfy either the Atmospheric Science/Meteorology Concentration Requirements or the Concentration Electives, but not both.
- AES301, AES 303, AES 341, AES 351, AES 305, AES 352, AES 410, AES 454, AES 471, AES 472 - These courses count towards the National Weather Service GS-1340 Federal Civil Service Requirements.

#### General Electives

0 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 0
  - Additional courses to reach 120 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credits of 100-level HPE courses can count toward degree requirements.

Grand Total Credits: **67**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following

- 12 hours from:
  - AES212 - SEVERE WEATHER ANALYSIS (4)
  - AES212L - LABORATORY
  - MA172 - CALCULUS II (4)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 13 hours from:
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES209 - DATA ANALYSIS TOOLS (2)
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)

Spring

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- Complete all of the following
  - 13 hours from:
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
  - 3 Hours Fine Art

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - AES321 - POLLUTION PROBLEMS (3)
    - AES341 - THERMODYNAMIC METEOROLOGY (3)
    - AES351 - DYNAMIC METEOROLOGY (3)
  - 3 hours from:
    - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
    - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
    - PSC300 - INTRO SOCIAL SCIENCE STATISTICS (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - 3 Hours History

Spring

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- Complete all of the following
  - 7 hours from:
    - AES303 - CLASSI & PHYSICAL CAUSES CLIM (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
    - AES498 - RESEARCH & PROF DEV CAPSTONE (1)
  - 3 Hours Concentration Elective (AES 300+ or 400+ course)
  - 3 Hours History

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - AES409 - SCI PROGRMNG FOR EARTH & ATMOS (3)
  - 3 Hours Concentration Elective (AES 300+ or 400+ course)
  - 3 Hours Concentration Elective (AES 400+ course)
  - 3 Hours Non-Literature Humanity
  - 2 Hours General Elective

Spring

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- Complete all of the following
  - 3 Hours Concentration Elective (AES 300+ or 400+ course)
  - 3 Hours Concentration Elective (AES 400+ course)
  - 3 Hours Concentration Elective (AES 400+ course)
  - 3 Hours Literature
  - 3 Hours Humanities, 2nd Fine Art or 2nd Literature

## **Atmospheric & Earth Science (BS) - Earth Systems Science (Concentration)**

### **Description**

The BS in Atmospheric & Earth Science with a concentration in Earth Systems Science embraces the interdisciplinary fields of biology, chemistry, physics, and mathematics to treat the Earth as an integrated system by applying principles from the natural and social sciences, including ecology, economics, geography, geology, hydrology, meteorology, and sociology. It seeks a deeper understanding of human interactions with the environment that determine the past, present and future states of the Earth and provides a holistic view for understanding the world and a pathway toward sustainability. Related careers are environmental risk assessment, public policy, decision-making, sustainability and geospatial analysis and intelligence. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Concentration Requirements**

Area V (Pre-Professional)

25 - 27 Total Credits

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- Complete all of the following
    - Complete
      - FYE101S - CHARGER SUCCESS - SCIENCE (1)
- Biology or Chemistry

- Complete 1 of the following
  - Complete
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - Complete
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
  - Complete
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)

#### Computer Programming

- Earned at least 1 of the following:
  - CS102 - INTRO TO C PROGRAMMING (3)
  - CS103 - INTRO PROGRAMMING USING JAVA (3)
  - CS104 - INTRO TO CS USING PYTHON (3)

#### Mathematics

- Complete all of the following
  - Earned at least 2 of the following:
    - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
    - MA281 - ELEMENTS OF STATISTICAL ANALYS (3)
  - Based on Math placement, prerequisite MA 112 and/or MA 113 Mathematics courses may be required.

#### Applied Statistics

- Earned at least 1 of the following:
  - MA281 - ELEMENTS OF STATISTICAL ANALYS (3)
  - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - PSC300 - INTRO SOCIAL SCIENCE STATISTIC (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - SOC303 - STATISTICS/SOCIAL SCIENCES (3)

#### Physics Sequence

- Complete 1 of the following
  - Complete
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
    - PH102 - GENERAL PHYSICS II (4)
    - PH102L - GENERAL PHYSICS LAB II
  - Complete
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

#### Concentration Requirements

15 - 16 Total Credits

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- Complete all of the following
  - Complete
    - AES305 - HYDROLOGY (3)
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
  - Earned at least 1 of the following:
    - AES312 - PRINCIPLES OF ECOLOGY (4)
    - AES321 - POLLUTION PROBLEMS (3)
  - Earned at least 1 of the following:



- AES408 - PYTHON FOR GIS (3)
- AES409 - SCI PROGRMNG FOR EARTH & ATMOS (3)

#### Concentration Electives

17 Total Credits

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- Complete all of the following
  - 17 hours from:
    - AES210 - COLLAPSE OF CIVILIZATIONS (3)
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES212L - LABORATORY
    - AES302 - PEOPLE, PLANTS, & ENVIRONMENT (3)
    - AES307 - ENVIRONMENTAL ARCHEOLOGY (3)
    - AES312 - PRINCIPLES OF ECOLOGY (4)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES402 - SCI & SOC ASPTS NATRL DISASTER (3)
    - AES407 - ENV THRTS, PUB POLY, & DEC MKG (3)
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCI PROGRMNG FOR EARTH & ATMOS (3)
    - AES414 - GEOSPATIAL APPLICATIONS (3)
    - AES415 - ADVANCED TOPICS IN GIS (3)
    - AES420 - INTRO ATMOSP CHEM & AIR POLLU (3)
    - AES472 - SATELLITE METEOROLOGY (3)
    - AES490 - SPEC TOPICS EARTH & ATMOSPH SC (1 - 3)
    - AES495 - DIRECTED STUDY (2 - 4)
    - AES497 - UNDERGRADUATE INTERNSHIP (3)
    - AES499 - UNDERGRADUATE RESEARCH (2 - 4)
  - at least 6 credits must be at the 400-level
  - AES 490 Special Topics course may count in the Earth System Science Concentration Electives section with department approval.
  - AES 495, AES 497, & AES 499 - Student may choose only one of these courses to count in the Atmospheric Science/Meteorology Concentration Electives section.
  - AES 495, AES 497, & AES 499 - Student may choose one of these courses to count in the Earth System Science Concentration Electives section.

Grand Total Credits: **57 - 60**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 11 hours from:
    - AES105 - WORLD REGIONAL GEOGRAPHY (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - MA172 - CALCULUS II (4)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 1 Hour General Elective

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
    - AES209 - DATA ANALYSIS TOOLS (2)
    - CS104 - INTRO TO CS USING PYTHON (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 Hours History

Spring

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- Complete all of the following
  - 10 hours from:
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - 3 Hours Fine Art
  - 3 Hours History

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
  - 3 hours from:
    - AES321 - POLLUTION PROBLEMS (3)
    - BYS312 - PRINCIPLES OF ECOLOGY (4)
  - 3 hours from:
    - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
    - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
    - PSC300 - INTRO SOCIAL SCIENCE STATISTICS (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)

- SOC303 - STATISTICS/SOCIAL SCIENCES (3)
- 4 Hours Earth System Science Concentration Elective
- 1 Hour General Elective

Spring

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- Complete all of the following
  - 10 hours from:
    - AES303 - CLASSI & PHYSICAL CAUSES CLIM (3)
    - AES305 - HYDROLOGY (3)
    - AES408 - PYTHON FOR GIS (3)
    - AES498 - RESEARCH & PROF DEV CAPSTONE (1)
  - 3 Hours Literature
  - 3 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 3 Hours Earth System Science Concentration Elective (400+ course)
  - 3 Hours Earth System Science Concentration Elective (300+ or 400+ course)
  - 3 Hours Humanities, 2nd Fine Art or 2nd Literature
  - 4 Hours General Elective

Spring

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- Complete all of the following
  - 3 Hours Earth System Science Concentration Elective (400+ course)
  - 3 Hours Earth System Science Concentration Elective (300+ or 400+ course)
  - 3 Hours Earth System Science Concentration Elective
  - 3 Hours non-Literature Humanity
  - 3 Hours General Elective

## **Atmospheric & Earth Science (BS) - JUMP: BS AES, Atmospheric and Earth Science (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Atmospheric & Earth Sciences to an MS in Atmospheric & Earth Sciences is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **Approved Master's Program**

Atmospheric & Earth Science (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_AES@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_AES@uah.edu

## **Atmospheric & Earth Science (MS)**

### **Program Description**

The MS in Atmospheric and Earth Science is devoted to providing high-quality education and to contributing international-caliber research in the areas of remote sensing, atmospheric chemistry and air pollution, radiative transfer, microwave radiometry, severe storms, numerical modeling, and climate-change modeling and measurements. Graduate students from a variety of disciplines have a sound background in applied physics, chemistry, mathematics and computer programming and an interest in complex natural phenomena. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-graduate-programs>.

### **Number of Credit Hours**

39

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Atmospheric & Earth Science (MS) - Atmospheric Science (Concentration)**

### **Description**

The MS in Atmospheric and Earth Science with a concentration in Atmospheric Science/Meteorology provides students with advanced knowledge of air quality, atmospheric chemistry, cloud processes, climate dynamics, radar meteorology, satellite remote sensing, mesoscale meteorology, severe storms, tropical cyclones, and numerical weather prediction. Students graduate with the qualitative and quantitative skills necessary for employment in atmospheric science research, teaching, and private enterprise. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-graduate-programs>

### **Concentration Requirements**

#### Core Courses

9 Total Credits

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- Complete all of the following
  - 9 hours from:
    - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
    - AES551 - ATMOS FLUID DYNAMICS I (3)
    - AES561 - ATMOSPHERIC RADIATION I (3)
  - Students must earn a B or above in core courses.
  - Students who have earned a B or better in the undergraduate equivalent AES 509, AES 541, AES 551, AES 561 at UAH do not have to re-take the course at the graduate level. However, their Program of Study must include alternative semester hours at the appropriate level approved by their advisor and chair of the department.

#### Supporting Courses

6 Total Credits

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- 6 hours from:
  - AES509 - SCI PROGRAMNG FOR EARTH & ATMOS (3)
  - AES780 - SEMINAR (1)
  - AES781 - STUDENT SEMINAR (1)
  - AES782 - PROFESSIONAL DEVELOPMENT (1)

#### Thesis/Non-Thesis

21 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 12 hours from any AES 600 - 700 level course(s)
      - 3 hours from any AES 500 - 600 level course(s)
      - 6 hours from:
        - AES699 - MASTER'S THESIS (0 - 6)
      - During the second semester, the student, with the guidance of their advisor, should form a supervisory committee. Student must submit a five-page thesis proposal to be approved by the advisor and committee by the end of the third full semester.
  - Non-Thesis Seeking Students
    - Complete all of the following
      - 15 hours from any AES 600 - 700 level course(s)
      - 6 hours from any AES 500 - 600 level course(s)
      - A final comprehensive examination is required of all candidates for a master's degree. This examination may be written, oral, or both.

Grand Total Credits: **36**

## Atmospheric & Earth Science (MS) - Earth Systems Science (Concentration)

### Description

The MS in Atmospheric & Earth Science with a concentration in Earth Systems Science provides students with advanced knowledge of Earth system science by treating the Earth as an integrated system and by applying advanced principles from the natural and social sciences, including chemistry, physics, mathematics, hydrology, meteorology, ecology, economics, sociology, and geographic information systems. Earth system science seeks a deeper understanding of human interactions with the environment that determine the past, present, and future states of the Earth and provides a holistic view for understanding the world and a pathway toward sustainability. Students graduate with the qualitative and quantitative skills necessary for employment in environmental risk assessment, public policy, decision-making and sustainability, and geospatial analysis and intelligence. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-graduate-programs>.

### Concentration Requirements

#### Core Courses

9 Total Credits

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- Complete all of the following
  - 9 hours from:
    - AES507 - ENVRNMTL THRTS PBL PY DEC MKG (3)
    - AES514 - GEOSPATIAL APPLICATIONS (3)
    - AES630 - PHYSICAL CLIMATOLOGY (3)
  - Students must earn a B or above in core courses.
  - Students who have earned a B or better in the undergraduate equivalent of AES 507, AES 508 (or AES 509) and AES 514 at UAH do not have to re-take the course at the graduate level. However, their Program of Study must include alternative semester hours to replace AES 507 and AES 514 at an appropriate level approved by their advisor and chair of the department.
  - If a student has advanced GIS experience, the AES 514 core may be replaced with an advanced course at the discretion of the Department Chair.

#### Supporting Courses

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - AES508 - PYTHON FOR ID ESS APPLICATIONS (3)
    - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)
  - 3 hours from:
    - AES780 - SEMINAR (1)
    - AES781 - STUDENT SEMINAR (1)
    - AES782 - PROFESSIONAL DEVELOPMENT (1)

#### Thesis/Non-Thesis

21 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 9 hours from any AES 600 - 700 level course(s)
      - 6 hours from any AES 500 - 700 level course(s)
      - 6 hours from:
        - AES699 - MASTER'S THESIS (0 - 6)
    - One of the goals of this program is to train the student in transitioning research and observational products related to ESS into public policy and decision-making arenas. Therefore, it is necessary that the student spend time working with a decision-making

organization. The student must submit a five-page thesis proposal to be approved by the advisor and committee by the end of the third full semester.

Non-Thesis Seeking Students

- Complete all of the following
  - 3 hours from:
    - AES698 - MASTERS CAPSTONE (3)
  - 3 hours from any AES 500 - 600 level course(s)
  - 3 hours from any AES 600 - level course(s)
  - 3 hours from any 500 - 600 level course(s)
  - 9 hours from any 600 - level course(s)
  - Non-thesis students will pursue approved external internship programs with the help of their mentor; in the event that a student does not receive an external internship, they will be required to do a capstone project with an ATS faculty member or approved ESSC scientist/researcher.
  - Course selection from outside the department and colleges must be done with approval and guidance from faculty mentors and the department chair; faculty mentors will guide the student to pursue a coherent suite of complementary courses outside AES.

Grand Total Credits: **36**



## **Atmospheric Science (Minor)**

### **Program Description**

The minor in Atmospheric and Earth Science offers an undergraduate minor in Atmospheric Science provides students with knowledge and skills related to weather analysis and predictability, climate change, air quality and other atmospheric processes that affect the world around us. It prepares students to assess how weather and climate impact their chosen career field, including in engineering, business, and the social sciences. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES212L - LABORATORY
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
  - 6 hours from:
    - AES303 - CLASSICAL & PHYSICAL CAUSES CLIMATE (3)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES351 - DYNAMIC METEOROLOGY (3)
    - AES352 - SYNOPTIC METEOROLOGY (3)
    - AES409 - SCIENCE PROGRAMMING FOR EARTH & ATMOSPHERE (3)
    - AES410 - OPERATIONAL WEATHER FORECASTING (3)
    - AES420 - INTRO ATMOSPHERIC CHEMISTRY & AIR POLLUTION (3)
    - AES441 - ATMOSPHERIC THERMODYNAMICS & CLOUD PHYSICS (3)
    - AES451 - ATMOSPHERIC FLUID DYNAMICS I (3)
    - AES454 - FORECASTING MESOSCALE PROCESSES (3)
    - AES461 - ATMOSPHERIC RADIATION I (3)
    - AES471 - RADAR METEOROLOGY (3)

Grand Total Credits: **21**

## **Atmospheric Science (PhD)**

### **Program Description**

The PhD in Atmospheric Science provides students opportunities to contribute to innovative, international-caliber research in the areas of radar and satellite remote sensing, atmospheric chemistry and air pollution, radiative transfer, microwave radiometry, cloud processes and microphysics, mesoscale meteorology, severe storms, tropical cyclones, numerical modeling, machine learning, and climate-change modeling and measurements. Doctoral candidates come from a variety of disciplines and have in common a sound background in the fundamentals of applied physics, chemistry, mathematics and data analysis and an interest in complex natural phenomena. Graduates are prepared to be national and international leaders in atmospheric science research, teaching, and private enterprise. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-graduate-programs>

### **Number of Credit Hours**

72

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

## **Major Requirements**

### Requirements

54 Total Credits

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- Complete all of the following
  - Core Courses
    - 9 hours from:
      - AES541 - ATM THERMODYN & CLOUD PHYSICS (3)
      - AES551 - ATMOS FLUID DYNAMICS I (3)
      - AES561 - ATMOSPHERIC RADIATION I (3)
  - Program Courses
    - Complete all of the following
      - 39 hours from any AES 500 - 700 level course(s)
      - 6 hours from:
        - AES509 - SCI PROGRMNG FOR EARTH & ATMOS (3)
        - AES780 - SEMINAR (1)
        - AES781 - STUDENT SEMINAR (1)
        - AES782 - PROFESSIONAL DEVELOPMENT (1)

### Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - AES799 - DOCTORAL DISSERTATION (9)

Grand Total Credits: **72**

## **Biological Sciences (BS)**

## **Program Description**

The BS in Biological Sciences prepares students for hands-on, applied, or basic work in the life sciences. This degree is extremely versatile, and electives can be chosen to emphasize desired specializations, such as attending graduate school to study biology, experiment with materials as a research scientist or biochemist, or advance to a medical, dental, or veterinary program. Areas covered by this broad program include molecular biology, computational biology, cell biology, organismal biology, and ecology and evolution. The program emphasizes how systems are integrated across scales in living organisms, from bacteria to fungi, animals to plants. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-undergraduate-programs>.

## **Number of Credit Hours**

120

## **Degree Requirements**

Degree Requirements

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- BS Degree Requirements (COS)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II

- Complete all of the following
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Non-Literature

    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)

- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)

- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)

- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Major Requirements**

Biology Core

18 Total Credits

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- 18 hours from:
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - BYS219 - GENETICS AND EVOLUTION (3)
  - BYS221 - GENETICS AND EVOLUTION LAB (1)
  - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
  - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - BYS490 - SENIOR CAPSTONE (2)

Grand Total Credits: **18**

## **Biological Sciences (BS) - Biochemistry-Biology (Concentration)**

### **Description**

The BS in Biological Sciences with a concentration in Biochemistry provides students with a strong background in both the fundamental aspects of modern biochemistry and in the quantitative physical sciences. The courses in this concentration connect chemical aspects of cells to structure, metabolism, and to how living organisms interact with different environments. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-undergraduate-programs>

### **Concentration Requirements**

Area V (Pre-Professional)

17 - 18 Total Credits

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- Complete all of the following
  - First Year Experience
    - Complete
      - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Computer Programming
    - Earned at least 1 of the following:
      - CS102 - INTRO TO C PROGRAMMING (3)
      - CS103 - INTRO PROGRAMMING USING JAVA (3)
      - CS104 - INTRO TO CS USING PYTHON (3)
      - BYS205 - CODING ALGORITHMS FOR BIOLOGY (3)
      - BYS431 - BIOLOGICAL DATA SKILLS (3)
  - Mathematics
    - Complete all of the following
      - Earned at least 1 of the following:
        - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
        - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
        - MA171S - CALCULUS I S-SECTION (4)
        - MA171 - CALCULUS I (4)
      - Based on Math placement. Higher math courses may be required. Speak with your Academic Advisor.
  - Applied Statistics
    - Earned at least 1 of the following:
      - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
      - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
      - PY300 - PSYCHOLOGICAL STATISTICS (3)



- SOC303 - STATISTICS/SOCIAL SCIENCES (3)

#### Physics

- Complete 1 of the following
  - Complete
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
  - Complete
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

#### Technical Writing

- Complete
  - EH301 - TECHNICAL WRITING (3)

#### Concentration Requirements

18 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - BYS321 - GENERAL MICROBIOLOGY I (4)
    - BYS321L - GENERAL MICROBIOLOGY I LAB
    - BYS361 - GENERAL BIOCHEMISTRY (3)
    - BYS362 - GENERAL BIOCHEMISTRY LAB (1)
    - BYS363 - GENERAL BIOCHEMISTRY II (3)
    - BYS365 - GENERAL BIOCHEMISTRY LAB II (1)
  - 6 hours from any BYS 300 - 400 level course(s)

#### General Electives

6 Total Credits

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- 6 hours from the following:  
Additional courses to reach 120 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credits of 100-level HPE courses can count toward degree requirements.

#### Minor Requirements

20 Total Credits

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- Complete all of the following
  - A Chemistry Minor is required for this concentration.
  - Earned at least 20 credits from: CH

Grand Total Credits: **61 - 62**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - MA112 - PRECALCULUS ALGEBRA (3)

- Earned at least 1 of the following:
  - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - HON101 - INTRO TO HONORS RESEARCH (1)
- 3 hours from:
  - EH101 - COLLEGE WRITING I (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 11 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA171 - CALCULUS I (4)
  - 3 Hours Fine Art
  - 3 Hours History

Spring

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- Complete all of the following
  - 8 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - 3 Hours 2nd History
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 8 hours from:
    - CH331 - ORGANIC CHEMISTRY I (3)

- CH335 - ORGANIC CHEMISTRY LAB I (1)
- PH101 - GENERAL PHYSICS I (4)
- PH101L - GENERAL PHYSICS I LAB
- 3 hours from:
  - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
- 3 Hours Biological Sciences Elective (BYS 300+ or 400+ Course)

Spring

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- Complete all of the following
  - 8 hours from:
    - BY321 - GENERAL MICROBIOLOGY I (4)
    - BY321L - GENERAL MICROBIOLOGY I LAB
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
  - 3 hours from:
    - BY205 - CODING ALGORITHMS FOR BIOLOGY (3)
    - BY431 - BIOLOGICAL DATA SKILLS (3)
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Year 4

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Fall

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- Complete all of the following
  - 7 hours from:
    - BY361 - GENERAL BIOCHEMISTRY (3)
    - BY362 - GENERAL BIOCHEMISTRY LAB (1)
    - EH301 - TECHNICAL WRITING (3)
  - 3 Hours Social & Behavioral Science
  - 3 Hours Non-Literature Humanities
  - 3 Hours General Elective (300+ or 400+ Course)

Spring

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- Complete all of the following
  - 6 hours from:
    - BY363 - GENERAL BIOCHEMISTRY II (3)
    - BY365 - GENERAL BIOCHEMISTRY LAB II (1)
    - BY490 - SENIOR CAPSTONE (2)
  - 3 Hours Biological Sciences Elective (BYS 300+ or 400+ Course)
  - 3 Hours Social & Behavioral Science
  - 4 Hours General Electives

**Biological Sciences (BS) - Biology, General (No Concentration Selected)**

## **Description**

The BS in Biology with a General concentration is the path for students pursuing the degree without also pursuing a preprofessional, ecology and evolution, or biochemistry concentration. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/biology>.

## **Concentration Requirements**

Area V (Pre-Professional)

25 Total Credits

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- Complete all of the following
  - First Year Experience
    - Complete
      - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - General Chemistry and Lab
    - Complete 1 of the following
      - Complete
        - CH101 - INTRO TO CHEMISTRY (3)
        - CH105 - INTRO CHEMISTRY LAB (1)
      - Complete
        - CH121 - GENERAL CHEMISTRY I (3)
        - CH125 - GENERAL CHEMISTRY LAB I (1)
  - Organic Chemistry and Lab
    - Complete 1 of the following
      - Complete
        - CH201 - ELEM ORGANIC CHEMISTRY (3)
        - CH205 - ELEM ORGANIC CHEMISTRY LAB (1)
      - Complete
        - CH331 - ORGANIC CHEMISTRY I (3)
        - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - Computer Programming
    - Earned at least 1 of the following:
      - CS102 - INTRO TO C PROGRAMMING (3)
      - CS103 - INTRO PROGRAMMING USING JAVA (3)
      - CS104 - INTRO TO CS USING PYTHON (3)
      - BYS205 - CODING ALGORITHMS FOR BIOLOGY (3)
      - BYS431 - BIOLOGICAL DATA SKILLS (3)
  - Mathematics
    - Complete all of the following
      - Complete
        - MA112 - PRECALCULUS ALGEBRA (3)
      - Based on Math placement. Higher math courses may be needed. Speak with your Academic Advisor.
  - Applied Statistics
    - Earned at least 1 of the following:
      - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
      - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
      - PY300 - PSYCHOLOGICAL STATISTICS (3)
      - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - Physics
    - Complete 1 of the following
      - Complete
        - PH101 - GENERAL PHYSICS I (4)
        - PH101L - GENERAL PHYSICS I LAB
      - Complete
        - PH111 - GEN PHYSICS W/CALCULUS I (3)

- PH114 - GENERAL PHYSICS LAB I (1)

Technical Writing

- Complete

- EH301 - TECHNICAL WRITING (3)

Concentration Requirements

18 Total Credits

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- Earned at least 18 credits from BYS

General Electives

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from the following:  
Additional courses to reach 120 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credits of 100-level HPE courses can count toward degree requirements.

Grand Total Credits: **61**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
    - MA112 - PRECALCULUS ALGEBRA (3)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 8 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH201 - ELEM ORGANIC CHEMISTRY (3)
    - CH205 - ELEM ORGANIC CHEMISTRY LAB (1)
  - 3 hours from:
    - EH103 - ACCELERATED COLLEGE WRITING (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 8 hours from:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
  - 3 Hours History
  - 3 Hours Fine Art

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 4 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - 3 Hours Social & Behavioral Science
  - 3 Hours History
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 3 hours from:
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
    - BYS205 - CODING ALGORITHMS FOR BIOLOGY (3)
    - BYS431 - BIOLOGICAL DATA SKILLS (3)
  - 4 Biological Sciences Elective (300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 4 Biological Sciences Elective (300+ or 400+ Course)
  - 3 Hours Humanities, 2nd Fine art or 2nd Literature
  - 3 Hours General Elective (300+ or 400+ Course)
  - 6 Hours General Electives

Year 4

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Fall

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- Complete all of the following

- 3 hours from:
  - EH301 - TECHNICAL WRITING (3)
- 7 Hours Biological Sciences Electives (300+ or 400+ Courses)
- 3 Hours General Elective (300+ or 400+ Course)
- 3 Hours General Elective

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 2 hours from:
    - BYS490 - SENIOR CAPSTONE (2)
  - 3 Hours Biological Sciences Elective (300+ or 400+ Course)
  - 11 Hours General Electives

## **Biological Sciences (BS) - Ecology & Evolution (Concentration)**

### **Description**

The BS in Biological Sciences with a concentration in Ecology & Evolution teaches students to unravel the mysteries of how animals, plants, and microbes function, how they interact, and how they evolve in a changing world. The ecology and evolution concentration is unique in its broad and interdisciplinary approach. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-undergraduate-programs>.

### **Concentration Requirements**

Area V (Pre-Professional)

25 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - First Year Experience
    - Complete
      - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - General Chemistry and Lab
    - Complete 1 of the following
      - Complete
        - CH101 - INTRO TO CHEMISTRY (3)
        - CH105 - INTRO CHEMISTRY LAB (1)
      - Complete
        - CH121 - GENERAL CHEMISTRY I (3)
        - CH125 - GENERAL CHEMISTRY LAB I (1)
  - Organic Chemistry and Lab
    - Complete 1 of the following
      - Complete
        - CH201 - ELEM ORGANIC CHEMISTRY (3)
        - CH205 - ELEM ORGANIC CHEMISTRY LAB (1)
      - Complete
        - CH331 - ORGANIC CHEMISTRY I (3)
        - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - Computer Programming
    - Earned at least 1 of the following:
      - CS102 - INTRO TO C PROGRAMMING (3)
      - CS103 - INTRO PROGRAMMING USING JAVA (3)
      - CS104 - INTRO TO CS USING PYTHON (3)
      - BYS205 - CODING ALGORITHMS FOR BIOLOGY (3)
      - BYS431 - BIOLOGICAL DATA SKILLS (3)

#### Mathematics

- Complete all of the following
  - Complete
    - MA112 - PRECALCULUS ALGEBRA (3)
  - Based on Math placement. Higher math courses may be needed. Speak with your Academic Advisor.

#### Applied Statistics

- Earned at least 1 of the following:
  - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
  - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - SOC303 - STATISTICS/SOCIAL SCIENCES (3)

#### Physics

- Complete 1 of the following
  - Complete
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
  - Complete
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)

#### Technical Writing

- Complete
  - EH301 - TECHNICAL WRITING (3)

#### Concentration Requirements

18 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete
    - BYS312 - PRINCIPLES OF ECOLOGY (4)
    - BYS321 - GENERAL MICROBIOLOGY I (4)
    - BYS321L - GENERAL MICROBIOLOGY I LAB
    - BYS364 - BIOGEOGRAPHY (3)
    - BYS464 - EVOLUTION (3)
  - 4 hours from any BYS 300 - 400 level course(s)

#### General Electives

17 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least this many additional elective credits: 17
  - Additional courses to reach 120 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credits of 100-level HPE courses can count toward degree requirements.

Grand Total Credits: **60**

#### **4-Year Plan**

Year 1

*keyboard\_arrow\_up*

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Fall

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- Complete all of the following
  - 7 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)



- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- MA112 - PRECALCULUS ALGEBRA (3)
- Earned at least 1 of the following:
  - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - HON101 - INTRO TO HONORS RESEARCH (1)
- 3 hours from:
  - EH101 - COLLEGE WRITING I (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)
- 3 Hours Fine Art

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 8 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH101 - INTRO TO CHEMISTRY (3)
    - CH105 - INTRO CHEMISTRY LAB (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 8 hours from:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - CH201 - ELEM ORGANIC CHEMISTRY (3)
    - CH205 - ELEM ORGANIC CHEMISTRY LAB (1)
  - 3 Hours Literature
  - 3 Hours Social & Behavioral Science

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 4 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - 3 hours from:
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - 3 Hours History
  - 3 Hours Non-Literature Humanities
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Year 3

*keyboard\_arrow\_up*

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 8 hours from:
    - BYS312 - PRINCIPLES OF ECOLOGY (4)
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
  - 3 Hours 2nd History
  - 4 Hours General Electives

Spring

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- Complete all of the following
  - 3 hours from:
    - BYS364 - BIOGEOGRAPHY (3)
  - 3 hours from:
    - BYS205 - CODING ALGORITHMS FOR BIOLOGY (3)
    - BYS431 - BIOLOGICAL DATA SKILLS (3)
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 9 Hours General Electives

Year 4

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Fall

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- Complete all of the following
  - 10 hours from:
    - BYS321 - GENERAL MICROBIOLOGY I (4)
    - BYS321L - GENERAL MICROBIOLOGY I LAB
    - BYS464 - EVOLUTION (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 Hours General Elective (300+ or 400+ Course)
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 2 hours from:
    - BYS490 - SENIOR CAPSTONE (2)
  - 4 Hours Biological Sciences Elective (BYS 300+ or 400+ Course)
  - 3 Hours General Elective (300+ or 400+ Course)
  - 7 Hours General Elective

## **Biological Sciences (BS) - JUMP: BS BYS, Biological Sciences (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Biological Sciences to an MS in Biological Sciences is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Biological Sciences (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_BYS@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Biology@uah.edu

## **Biological Sciences (BS) - Pre-Professional Health Careers (Concentration)**

### **Description**

The BS in Biological Sciences with a concentration in Pre-Professional Health Careers is designed for student interested in pursuing a career in medicine, dentistry, optometry, pharmacy, veterinary medicine or another health profession. It enables students to complete the rigorous pre-health prerequisites in addition to gaining experience with individuals in these different careers. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/biology/bys-undergraduate-programs>

## **Concentration Requirements**

Area V (Pre-Professional)

16 - 18 Total Credits

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- Complete all of the following
  - First Year Experience
    - Complete
      - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Mathematics
    - Complete all of the following
      - Calculus I
        - Complete 1 of the following
          - Complete
            - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
            - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
          - Earned at least 1 of the following:
            - MA171 - CALCULUS I (4)
            - MA171S - CALCULUS I S-SECTION (4)
      - Based on Math placement, prerequisite MA 112 and/or MA 113 Mathematics courses may be required.
    - Applied Statistics
      - Earned at least 1 of the following:
        - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
        - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
        - PY300 - PSYCHOLOGICAL STATISTICS (3)
        - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - Physics
      - Complete 1 of the following
        - Complete
          - PH101 - GENERAL PHYSICS I (4)
          - PH101L - GENERAL PHYSICS I LAB
          - PH102 - GENERAL PHYSICS II (4)
          - PH102L - GENERAL PHYSICS LAB II
        - Complete
          - PH111 - GEN PHYSICS W/CALCULUS I (3)
          - PH114 - GENERAL PHYSICS LAB I (1)
          - PH112 - GEN PHYSICS W/CALC II (3)
          - PH115 - GENERAL PHYSICS LAB II (1)

Concentration Requirements

22 Total Credits

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- Complete all of the following
  - Complete
    - BYS321 - GENERAL MICROBIOLOGY I (4)
    - BYS321L - GENERAL MICROBIOLOGY I LAB
    - BYS361 - GENERAL BIOCHEMISTRY (3)
    - BYS362 - GENERAL BIOCHEMISTRY LAB (1)
  - A&P Sequence
    - Complete 1 of the following
      - Complete
        - BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
        - BYS215L - HUMAN ANAT & PHYS I LAB
        - BYS216 - HUMAN ANATOMY & PHYSIOLOGY II (4)
        - BYS216L - HUMAN ANAT & PHYS II LAB
      - Complete

- BYS313 - ANATOMY & PHYSIOLOGY I (4)
- BYS313L - ANATOMY & PHYSIOLOGY I LAB
- BYS314 - ANATOMY & PHYSIOLOGY II (4)
- BYS314L - ANATOMY & PHYSIOLOGY II LAB

- 6 hours from any BYS 300 - 400 level course(s)

#### Minor Requirements

20 Total Credits

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- Complete all of the following
  - A Chemistry Minor is required for this concentration.
  - Earned at least 20 credits from: CH

#### General Electives

3 Total Credits

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- 3 hours from the following:  
Additional courses to reach 120 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor. No more than 4 credits of 100-level HPE courses can count toward degree requirements.

Grand Total Credits: **61 - 63**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 13 hours from:
    - BYS100 - INTRO HEALTH PROFESSIONS (1)
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 8 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Fine Art

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
    - PH101 - GENERAL PHYSICS I (4)
    - PH101L - GENERAL PHYSICS I LAB
  - 3 Hours History

Spring

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- 15 hours from:
  - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
  - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - PH102 - GENERAL PHYSICS II (4)
  - PH102L - GENERAL PHYSICS LAB II
  - PY101 - GENERAL PSYCHOLOGY I (3)

Year 3

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Fall

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- Complete all of the following
  - 11 hours from:
    - BYS313 - ANATOMY & PHYSIOLOGY I (4)
    - BYS313L - ANATOMY & PHYSIOLOGY I LAB
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - PY201 - LIFE-SPAN DEVELOPMENT (3)
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 11 hours from:
    - BYS314 - ANATOMY & PHYSIOLOGY II (4)
    - BYS314L - ANATOMY & PHYSIOLOGY II LAB
    - BYS361 - GENERAL BIOCHEMISTRY (3)
    - BYS362 - GENERAL BIOCHEMISTRY LAB (1)
    - SOC100 - INTRO TO SOCIOLOGY (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Year 4

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Fall

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- Complete all of the following
  - 4 hours from:
    - BYS321 - GENERAL MICROBIOLOGY I (4)
    - BYS321L - GENERAL MICROBIOLOGY I LAB
  - 3 Hours Biological Sciences Elective (BYS 300+ or 400+ Course)
  - 3 Hours Non-Literature Humanities
  - 6 Hours General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - BYS363 - GENERAL BIOCHEMISTRY II (3)
    - BYS365 - GENERAL BIOCHEMISTRY LAB II (1)
    - BYS490 - SENIOR CAPSTONE (2)
  - 9 Hours General Elective

## **Biological Sciences (MS)**

### **Program Description**

The MS in Biological Sciences provides students with personalized research programs that prepare them for careers in research, education, health professions, and business. Coursework includes cell biology, genetics, genomics, molecular biology, microbiology, physiology, ecology, computational biology, and evolutionary biology. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-graduate-programs>

### **Number of Credit Hours**

33

## **Degree Requirements**

### Degree Requirements

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- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.



## Biological Sciences (MS) - Biological Sciences, General (Concentration)

### Description

The MS in Biological Sciences with a General concentration is the path for students pursuing the degree without also pursuing a teaching credential. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/biology>.

### Concentration Requirements

Core Requirements

24 Total Credits

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- 24 hours from any BYS 500 - 600 level course(s)

Thesis/Non-Thesis

6 - 9 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students (Plan I)
    - Complete all of the following
      - 6 hours from:
        - BYS699 - MASTER'S THESIS (0 - 6)
      - Students will perform original research (a minimum of six thesis research credit hours) that will be described in their research thesis under the direction of a research advisor. The program of study (i.e., coursework) will be developed with your research advisor to meet your education and specific career goals. Students will prepare and defend a thesis proposal within their first year in the graduate program. Students will complete a written thesis then an open seminar followed by defense to their committee typically by the end of their second year in the graduate program.
  - Non-Thesis Seeking Students (Plan II)
    - Complete all of the following
      - 9 hours from any BYS 500 - 600 level course(s)
      - Students will complete a written proposal and write a Master's report under the direction of an advisor. The report is usually in the form of a literature review or survey about a topic agreed upon with the advisor. The presentation is not open to the UAH community, but presented only to a supervisory committee.

Grand Total Credits: **30 - 33**

## Biological Sciences (MS) - Education (Concentration)

### Description

The MS in Biology with a concentration in Education leads to Class A Teaching Certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### Concentration Requirements

Requirements

36 - 51 Total Credits

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- Complete 1 of the following
  - Traditional Program
    - Complete all of the following
      - 24 hours from any BYS 500 - 600 level course(s)
      - 12 hours from any ED 500 - 600 level course(s)
      - Students with existing Alabama Class B certification will complete a written comprehensive final examination, and write and present a Master's report under the direction of an advisor. The report is usually in the form of a literature review or survey about a topic agreed upon with the advisor. The presentation is not open to the UAH community, but only presented to a supervisory committee. The written examination is comprehensive in nature with questions based on coursework taken in the graduate program. Graduates will be recommended for Alabama Class A teaching certification.
  - Nontraditional Fifth Year Program
    - Complete all of the following
      - 24 hours from any BYS 500 - 600 level course(s)
      - 24 hours from any ED 500 - 600 level course(s)
      - 3 hours from:
        - ED698 - HIGH SCHOOL INTERNSHIP (3 - 6)
      - Students with an accredited baccalaureate degree other than teacher education seeking initial certification (those that do not have a Class B baccalaureate level teaching certification) will complete coursework in the Department of Biological Sciences (24 credit hours) and in the College of Education (27 hours, including an internship), complete a written comprehensive final examination, and write and present a Master's report under the direction of an advisor. There are no required courses in this Plan III track. The report is usually in the form of a literature review or survey about a topic agreed upon with the advisor. The presentation is not open to the UAH community, but only presented to a supervisory committee. The written examination is comprehensive in nature with questions based on coursework taken in the graduate program. Students will also be required to take a one-hour course, "Introduction to Education," prior to admission to the Teacher Education Program. Graduates will be recommended for Alabama Class A teaching certification.

Grand Total Credits: **36 - 51**

## **Biology (Minor)**

### **Program Description**

The minor in Biology prepares students for hands-on, applied or basic work in a wide range of scientific areas, depending on other programs that are taken. The biology minor is versatile, and electives can be chosen to emphasize desired specializations. Areas covered by this program include molecular biology, computational biology, cell biology, organismal biology, and ecology and evolution. It emphasizes how systems are integrated across scales in living organisms, from bacteria to fungi, animals to plants. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/biology/bys-undergraduate-programs>

### **Number of Credit Hours**

25

### **Minor Requirements**

- Complete all of the following  
BYS 300 Prerequisites
  - Complete 1 of the following
    - Complete
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
    - Complete
      - CH201 - ELEM ORGANIC CHEMISTRY (3)
      - CH205 - ELEM ORGANIC CHEMISTRY LAB (1)
  - Complete
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - 5 hours from any BYS 300 - 400 level course(s)

Grand Total Credits: **25**

## Biotechnology Science and Engineering (PhD)

### Program Description

The PhD in Biotechnology Science and Engineering is a multidisciplinary field concerned with the practical application of biological organisms and their subcellular components to industrial or service manufacturing, to environmental management, health and medicine. Graduates of the program are expected to be able to make significant contributions to biotechnology in academic, governmental, and business settings. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-graduate-programs>.

### Number of Credit Hours

66

### Degree Requirements

Degree Requirements

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- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.
  - Graduate School PhD Requirements
    - Complete all of the following
      - 48 hours of graduate coursework (excluding dissertation research)
      - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
      - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
      - A minimum of 18 semester hours of dissertation research (799).
      - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
      - A dissertation approved by the supervisory committee.
  - Max of 50% courses can be at 500 level.

## **Biotechnology Science and Engineering (PhD) - Biological Sciences & Chemistry (Concentration)**

### **Description**

The PhD in Biotechnology Science and Engineering is a multidisciplinary field concerned with the practical application of biological organisms and their subcellular components to industrial or service manufacturing, to environmental management, health and medicine. Graduates of the program are expected to be able to make significant contributions to biotechnology in academic, governmental, and business settings. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-graduate-programs>.

### **Concentration Requirements**

Concentration Requirements

48 Total Credits

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- Complete all of the following
  - 12 hours from:
    - BYS519 - GENE STRUCTURE & FUNCTION (3)
    - BYS543 - MOLECULAR BIOLOGY OF THE CELL (3)
    - CH561 - BIOCHEMISTRY I (3)
    - CH562 - BIOCHEMISTRY II (3)
  - 3 hours from:
    - BSE780 - BIOTECHNOLOGY SCI/ENG SEMINAR (1)
  - 6 hours from any BYS or CH 500 - 700 level course(s)
  - 27 hours from any 500 - 700 level course(s)

Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - BSE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **Biotechnology Science and Engineering (PhD) - Chemical Engineering & Biological Sciences (Concentration)**

### **Description**

The PhD in Biotechnology Science and Engineering is a multidisciplinary field concerned with the practical application of biological organisms and their subcellular components to industrial or service manufacturing, to environmental management, health and medicine. Graduates of the program are expected to be able to make significant contributions to biotechnology in academic, governmental, and business settings. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-graduate-programs>.

### **Concentration Requirements**

Concentration Requirements

48 Total Credits

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- Complete all of the following
  - 12 hours from:
    - BYS519 - GENE STRUCTURE & FUNCTION (3)
    - BYS543 - MOLECULAR BIOLOGY OF THE CELL (3)
    - CHE560 - INTRO TO BIOPROCESS ENGR (3)
    - CHE561 - BIOSEPARATIONS RECOMBI TECH/PR (3)
  - 3 hours from:
    - BSE780 - BIOTECHNOLOGY SCI/ENG SEMINAR (1)
  - 6 hours from any BYS or CHE 500 - 700 level course(s)
  - 27 hours from any 500 - 700 level course(s)

Dissertation Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - BSE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **Biotechnology Science and Engineering (PhD) - Chemistry & Chemical Engineering (Concentration)**

### **Description**

The PhD in Biotechnology Science and Engineering is a multidisciplinary field concerned with the practical application of biological organisms and their subcellular components to industrial or service manufacturing, to environmental management, health and medicine. Graduates of the program are expected to be able to make significant contributions to biotechnology in academic, governmental, and business settings. For further information, please refer to <https://www.uah.edu/science/departments/biology/bys-graduate-programs>.

### **Concentration Requirements**

Concentration Requirements

48 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - CH561 - BIOCHEMISTRY I (3)
    - CH562 - BIOCHEMISTRY II (3)
    - CHE560 - INTRO TO BIOPROCESS ENGR (3)
    - CHE561 - BIOSEPARATIONS RECOMBI TECH/PR (3)
  - 3 hours from:
    - BSE780 - BIOTECHNOLOGY SCI/ENG SEMINAR (1)
  - 6 hours from any CH or CHE 500 - 700 level course(s)
  - 27 hours from any 500 - 700 level course(s)

Dissertation Requirements

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - BSE799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **Chemistry (BS)**

### **Program Description**

The BS in Chemistry provides students the fundamentals of chemistry while also exploring courses in other disciplines. It is well suited for students who want to work in a chemical industry or related industries where only a basic understanding of chemistry is required. The program of study for this degree has the advantage of providing students with flexibility to choose a large number of non-chemistry classes to broaden their education. For further information, visit the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>.

### **Number of Credit Hours**

120

## **Degree Requirements**

### Degree Requirements

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- BS Degree Requirements (COS)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARS160 - DRAWING: FOUNDATIONS (3)
        - MU100 - INTRO TO MUSIC LITERATURE (3)
        - TH122 - THEATRE APPRECIATION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
      - 3 hours from:



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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)
- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)
- Chemistry students must choose CM 113 to satisfy Area II: Humanities and Fine Arts in Charger Foundations.

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following

- 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)
- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)
- Chemistry students must choose MA 171 to satisfy Area III: Mathematics and Sciences in Charger Foundations.

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:  
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Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)  
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Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:  
*keyboard\_arrow\_up*  
Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)  
*keyboard\_arrow\_up*  
Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)  
*keyboard\_arrow\_up*  
Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

**Major Requirements**

Chemistry Core Requirements

22 Total Credits

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- 22 hours from:
  - CH121 - GENERAL CHEMISTRY I (3)
  - CH125 - GENERAL CHEMISTRY LAB I (1)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - CH223 - QUANTITATIVE ANALYSIS (3)
  - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - CH332 - ORGANIC CHEMISTRY II (3)
  - CH401 - INORGANIC CHEMISTRY (3)

Grand Total Credits: **22**

**Chemistry (BS) - Chemical Business (Concentration)**

## **Description**

The BS in Chemistry with a concentration in Chemical Business supplements the basic Chemistry with a specific set of courses in the College of Business. The program of study for this degree fulfills the coursework requirements to earn a minor in Business. For further information, please visit the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>.

## **Concentration Requirements**

Area V (Pre-Professional) Requirements

33 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Biology
  - 16 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - Mathematics
  - 8 hours from:
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
  - Physics
  - 8 hours from:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

Concentration Requirements

17 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 14 hours from:
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)
  - 3 hours from any CH 300 - 400 level course(s)

Minor Requirements

21 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Earned at least 21 credits from: BUS
  - A Business Minor is required.

Grand Total Credits: **71**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- 15 hours from:
  - BYS219 - GENETICS AND EVOLUTION (3)
  - BYS221 - GENETICS AND EVOLUTION LAB (1)
  - CH223 - QUANTITATIVE ANALYSIS (3)
  - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - ECN142 - PRINC OF MACROECONOMICS (3)

Spring

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- 15 hours from:
  - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
  - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - CH332 - ORGANIC CHEMISTRY II (3)
  - CH336 - ORGANIC CHEMISTRY LAB II (1)

- ECN143 - PRINC OF MICROECONOMICS (3)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH114 - GENERAL PHYSICS LAB I (1)

Year 3

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 7 hours from:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH401 - INORGANIC CHEMISTRY (3)
  - 3 Hours Fine Art
  - 3 Hours Literature
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 7 hours from:
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - CM113 - PUBLIC SPEAKING (3)
    - MSC287 - BUSINESS STATISTICS I (3)
  - 3 hours from:
    - ACC210 - ACCOUNTING FOR BUSINESS (4)
    - ACC211 - PRINC OF FINANCIAL ACCOUNTING (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Year 4

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Fall

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- Complete all of the following
  - 8 hours from:
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - MKT301 - PRINCIPLES OF MARKETING (3)
  - 3 hours from:
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)
  - 3 Hours History

Spring

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- Complete all of the following
  - 6 hours from:
    - FIN301 - PRINCIPLES OF FINANCE (3)
    - MGT301 - MANAGING ORGANIZATIONS (3)
  - 3 Hours 2nd History
  - 6 Hours General Electives

## Chemistry (BS) - Chemical Physics (Concentration)

### Description

The BS in Chemistry with a concentration in Chemical Physics is approved by the American Chemical Society and allows students to learn more about the fundamentals of Chemistry. This degree suggests more rigorous courses that emphasize hands-on laboratory hours and independent research in a chemistry topic under the supervision of a faculty advisor. This degree is designed for students seeking a graduate degree in Chemical Physics or Physical Chemistry. It will also earn students a minor in Physics. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>.

### Concentration Requirements

Area V (Pre-Professional) Requirements

27 - 29 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Biology
  - 8 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - Mathematics
  - Complete all of the following
    - Calculus I
    - Complete 1 of the following
      - 6 hours from:
        - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
        - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
      - 4 hours from:
        - MA171 - CALCULUS I (4)
        - MA171S - CALCULUS I S-SECTION (4)
    - 14 hours from:
      - MA171 - CALCULUS I (4)
      - MA201 - CALCULUS III (4)
      - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
      - MA244 - INTRO TO LINEAR ALGEBRA (3)

Concentration Requirements

28 Total Credits

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- Complete all of the following
  - 27 hours from:
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH346 - EXPERIMENTAL PHYSICAL CHEM II (1)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
    - PH251 - SPECIAL RELATIVITY (1)
    - PH431 - INTERM ELECTRICI & MAGNETISM I (3)



- PH432 - INTERM ELECTRIC & MAGNETISM II (3)
- PH451 - INTRO QUANTUM MECHANICS I (3)
- PH452 - INTRO QUANTUM MECHANICS II (3)
- 1 hours from:
  - CH491 - INTRO TO CHEMICAL RESEARCH (1)
  - CH492 - INTRO TO CHEMICAL RESEARCH (2)
  - CH493 - INTRO TO CHEMICAL RESEARCH (3)

Minor Requirements

21 Total Credits

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- Complete all of the following
  - Earned at least 21 credits from: PH
  - A Physics Minor is required.

Grand Total Credits: **76 - 78**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
    - PH110 - FRONTIERS IN SCIENCE (3)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 Hours Fine Art

Year 2

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Fall

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- 16 hours from:
  - BYS120 - ORGANISMAL BIOLOGY (3)
  - BYS122 - ORGANISMAL BIOLOGY LAB (1)
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - MA201 - CALCULUS III (4)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)

Spring

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- 16 hours from:
  - CH223 - QUANTITATIVE ANALYSIS (3)
  - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - CH332 - ORGANIC CHEMISTRY II (3)
  - CH336 - ORGANIC CHEMISTRY LAB II (1)
  - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - PH251 - SPECIAL RELATIVITY (1)

Year 3

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Fall

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- Complete all of the following
  - 14 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - 3 Hours History

Spring

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- Complete all of the following
  - 14 hours from:
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH346 - EXPERIMENTAL PHYSICAL CHEM II (1)
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CM113 - PUBLIC SPEAKING (3)
    - PH305 - MATH METHODS IN PHYSICS (3)
  - 3 Hours 2nd History

Year 4

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Fall

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- Complete all of the following
  - 13 hours from:
    - CH401 - INORGANIC CHEMISTRY (3)

- CH421 - INSTRUMENTAL ANALYSIS (3)
- CH422 - INSTRUMENTAL ANALYSIS LAB (1)
- PH431 - INTERM ELECTRIC & MAGNETISM I (3)
- PH451 - INTRO QUANTUM MECHANICS I (3)
- 3 Hours Literature

Spring

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- Complete all of the following
  - 7 hours from:
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - PH432 - INTERM ELECTRIC & MAGNETISM II (3)
    - PH452 - INTRO QUANTUM MECHANICS II (3)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)
  - 6 Hours Social & Behavioral Sciences
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

## **Chemistry (BS) - Chemistry, Basic (Concentration)**

### **Description**

The BS in Chemistry with a concentration in Basic Chemistry is approved by the American Chemical Society. You will take a more rigorous curriculum than the Basic Chemistry Degree, with courses that emphasize hands-on laboratory hours and independent research in a chemistry topic under the supervision of a faculty advisor. Your program of study will include a set of elective courses in specific topics related to pure chemistry, and it will also allow you to earn a major in Mathematics. This degree is well suited for students who plan to continue with graduate studies in chemistry or a related discipline.

For further information, visit <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>

## **Concentration Requirements**

### Area V (Pre-Professional) Requirements

33 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Biology
  - 16 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - Mathematics
  - 8 hours from:
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
  - Physics
  - 8 hours from:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

### Concentration Requirements

15 Total Credits

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- Complete all of the following
  - 9 hours from:
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - Sequence
  - Complete 1 of the following
    - 6 hours from:
      - CH341 - PHYSICAL CHEMISTRY I (3)
      - CH342 - PHYSICAL CHEMISTRY II (3)
    - 6 hours from:
      - CH347 - BIOPHYSICAL CHEMISTRY I (3)
      - CH348 - BIOPHYSICAL CHEMISTRY II (3)

Grand Total Credits: **48**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
    - CH331 - ORGANIC CHEMISTRY I (3)
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 Hours Fine Art

Year 3

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Fall

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- Complete all of the following
  - 10 hours from:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH401 - INORGANIC CHEMISTRY (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 Hours History
  - 3 Hours Social & Behavioral Science

Spring

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- Complete all of the following
  - 3 hours from:
    - CM113 - PUBLIC SPEAKING (3)
  - 1 Hour Chemistry Elective (CH 300+ or 400+ Course, CH 402 strongly recommended)
  - 3 Hours History
  - 3 Hours Social & Behavioral Science
  - 4 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 5 hours from:
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - 3 hours from:
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)
  - 6 Hours General Electives

Spring

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- Complete all of the following
  - 3 hours from:
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH348 - BIOPHYSICAL CHEMISTRY II (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
  - 6 Hours General Electives (300+ or 400+ Courses)
  - 3 Hours General Elective

**Chemistry (BS) - Chemistry, Biochemistry (Concentration)**

## **Description**

The BS in Chemistry with a concentration in Biochemistry is an American Chemical Society approved degree that allows students to learn more about the fundamentals of Chemistry. It suggests more rigorous courses that emphasize hands-on laboratory hours and independent research in a chemistry topic under the supervision of a faculty advisor. This degree prepares students to seek work in Chemical industry and related industries, however, also seeks to prepare students for Graduate studies or serves to prepare for medical school. The degree fulfills the requirements to earn a minor in Biological Sciences. For further information, please visit the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>.

## **Concentration Requirements**

Area V (Pre-Professional) Requirements

17 - 19 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Mathematics
    - Complete all of the following
      - Calculus I
        - Complete 1 of the following
          - 6 hours from:
            - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
            - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
          - 4 hours from:
            - MA171 - CALCULUS I (4)
          - 4 hours from:
            - MA172 - CALCULUS II (4)
    - Physics
      - 8 hours from:
        - PH111 - GEN PHYSICS W/CALCULUS I (3)
        - PH114 - GENERAL PHYSICS LAB I (1)
        - PH112 - GEN PHYSICS W/CALC II (3)
        - PH115 - GENERAL PHYSICS LAB II (1)

Concentration Requirements

23 Total Credits

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- Complete all of the following
  - 22 hours from:
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH346 - EXPERIMENTAL PHYSICAL CHEM II (1)
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)
    - CH348 - BIOPHYSICAL CHEMISTRY II (3)
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH363 - GEN BIOCHEMISTRY II (3)
    - CH364 - GEN BIOCHEMISTRY LAB II (1)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)

Minor Requirements

23 - 24 Total Credits

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- Complete all of the following
  - 20 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS321 - GENERAL MICROBIOLOGY I (4)
    - BYS321L - GENERAL MICROBIOLOGY I LAB
  - Earned at least 1 of the following:
    - BYS430 - IMMUNOLOGY (4)
    - BYS464 - EVOLUTION (3)

Grand Total Credits: **63 - 66**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - Complete 1 of the following
    - 6 hours from:
      - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
      - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - 4 hours from:
      - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
  - 3 hours from:



- EH102 - COLLEGE WRITING II (3)
- EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - CH331 - ORGANIC CHEMISTRY I (3)
    - CH335 - ORGANIC CHEMISTRY LAB I (1)
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 Hours Social & Behavioral Science

Year 3

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Fall

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- Complete all of the following
  - 14 hours from:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH401 - INORGANIC CHEMISTRY (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - CM113 - PUBLIC SPEAKING (3)
  - 3 Hours History

Spring

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- Complete all of the following
  - 5 hours from:
    - CH363 - GEN BIOCHEMISTRY II (3)
    - CH364 - GEN BIOCHEMISTRY LAB II (1)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
  - 3 Hours Fine Art
  - 3 Hours 2nd History
  - 3 Hours Social & Behavioral Science

Year 4

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- Take BYS 464 in the Fall and/or BYS 430 in the Spring

Fall

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- Complete all of the following
  - 8 hours from:
    - BYS464 - EVOLUTION (3)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH347 - BIOPHYSICAL CHEMISTRY I (3)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Spring

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- Complete all of the following
  - 8 hours from:
    - BYS430 - IMMUNOLOGY (4)
    - CH346 - EXPERIMENTAL PHYSICAL CHEM II (1)
    - CH348 - BIOPHYSICAL CHEMISTRY II (3)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)
  - 5 Hours General Electives

## **Chemistry (BS) - Chemistry, Pure (Concentration)**

### **Description**

The BS in Chemistry with a concentration in Pure Chemistry Degree is approved by the American Chemical Society. It requires a more rigorous curriculum than the Basic Chemistry Degree, with courses that emphasize hands-on laboratory hours and independent research in a chemistry topic under the supervision of a faculty advisor. It includes a set of elective courses in specific topics related to pure chemistry, and also allows students to earn a major in Mathematics. This degree is well suited for students who plan to continue with graduate studies in chemistry or a related discipline. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>.

## **Concentration Requirements**

### Area V (Pre-Professional) Requirements

37 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Biology
  - 16 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - Mathematics
  - 12 hours from:
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
  - Physics
  - 8 hours from:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

### Concentration Requirements

21 Total Credits

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- Complete all of the following
  - 20 hours from:
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - CH337 - ADVANCED CHEMISTRY LAB (2)
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH346 - EXPERIMENTAL PHYSICAL CHEM II (1)
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)

Grand Total Credits: **58**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- 16 hours from:
  - BYS219 - GENETICS AND EVOLUTION (3)
  - BYS221 - GENETICS AND EVOLUTION LAB (1)
  - CH223 - QUANTITATIVE ANALYSIS (3)
  - CH224 - QUANTITATIVE ANALYSIS LAB (1)
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)
  - MA201 - CALCULUS III (4)

Spring

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- Complete all of the following
  - 12 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
    - CH332 - ORGANIC CHEMISTRY II (3)
    - CH336 - ORGANIC CHEMISTRY LAB II (1)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 Hours Fine Art

Year 3

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH401 - INORGANIC CHEMISTRY (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 Hours Social & Behavioral Science

Spring

keyboard\_arrow\_up

- Complete all of the following
  - 3 hours from:
    - CH337 - ADVANCED CHEMISTRY LAB (2)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
  - 3 Hours Social & Behavioral Science
  - 3 Hours History
  - 3 Hours Literature
  - 3 Hours General Elective (300+ or 400+ Course)

Year 4

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Fall

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- Complete all of the following
  - 8 hours from:
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
  - 3 Hours History
  - 5 Hours General Electives

Spring

keyboard\_arrow\_up

- Complete all of the following
  - 7 hours from:
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH346 - EXPERIMENTAL PHYSICAL CHEM II (1)
    - CM113 - PUBLIC SPEAKING (3)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

**Chemistry (BS) - Environmental Chemistry (Concentration)**

## **Description**

The BS in Chemistry with a concentration in Environmental Chemistry is approved by the American Chemical Society and allows students to learn more about the fundamentals of Chemistry. This degree suggests more rigorous courses that emphasize hands-on laboratory hours and independent research in a chemistry topic under the supervision of a faculty advisor. It prepares students to seek work in the chemical industry and industries focusing on environmental studies and also seeks to prepare students for Graduate school. Further, it fulfills the requirements of a minor in Atmospheric and Earth Sciences.

For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>.

## **Concentration Requirements**

### Area V (Pre-Professional) Requirements

36 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 4 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Biology
  - 16 hours from:
    - BYS119 - PRINCIPLES OF BIOLOGY (3)
    - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - BYS219 - GENETICS AND EVOLUTION (3)
    - BYS221 - GENETICS AND EVOLUTION LAB (1)
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
  - Mathematics
  - 8 hours from:
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
  - Physics
  - 8 hours from:
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)

### Chemistry Requirements

17 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 10 hours from:
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH361 - GENERAL BIOCHEMISTRY (3)
    - CH362 - GENERAL BIOCHEMISTRY LAB (1)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)
  - Physical Chemistry option
  - Complete 1 of the following
    - Complete

- CH341 - PHYSICAL CHEMISTRY I (3)
- CH342 - PHYSICAL CHEMISTRY II (3)
- Complete
  - CH347 - BIOPHYSICAL CHEMISTRY I (3)
  - CH348 - BIOPHYSICAL CHEMISTRY II (3)

#### Atmospheric and Earth Science Requirements

21 Total Credits

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- Complete all of the following
  - 15 hours from:
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES212L - LABORATORY
  - 6 hours from:
    - AES303 - CLASSICAL & PHYSICAL CAUSES CLIMATE (3)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES351 - DYNAMIC METEOROLOGY (3)
    - AES352 - SYNOPTIC METEOROLOGY (3)
    - AES409 - SCIENTIFIC PROGRAMMING FOR EARTH & ATMOSPHERE (3)
    - AES410 - OPERATIONAL WEATHER FORECASTING (3)
    - AES420 - INTRO ATMOSPHERIC CHEM & AIR POLLUTION (3)
    - AES441 - ATMOSPHERIC THERMODYNAMICS & CLOUD PHYSICS (3)
    - AES451 - ATMOSPHERIC FLUID DYNAMICS I (3)
    - AES454 - FORECASTING MESOSCALE PROCESSES (3)
    - AES461 - ATMOSPHERIC RADIATION I (3)
    - AES471 - RADAR METEOROLOGY (3)

Grand Total Credits: **74**

#### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS120 - ORGANISMAL BIOLOGY (3)
    - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHALLENGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

*keyboard\_arrow\_up*

- Complete all of the following

- 12 hours from:
  - BYS119 - PRINCIPLES OF BIOLOGY (3)
  - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
  - CH123 - GENERAL CHEMISTRY II (3)
  - CH126 - GENERAL CHEMISTRY LAB II (1)
  - MA172 - CALCULUS II (4)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- 12 hours from:
  - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
  - AES103L - LABORATORY
  - BYS219 - GENETICS AND EVOLUTION (3)
  - BYS221 - GENETICS AND EVOLUTION LAB (1)
  - CH331 - ORGANIC CHEMISTRY I (3)
  - CH335 - ORGANIC CHEMISTRY LAB I (1)

Spring

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- Complete all of the following
  - 11 hours from:
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - CH332 - ORGANIC CHEMISTRY II (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 Hours Fine Art

Year 3

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Fall

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- Complete all of the following
  - 12 hours from:
    - BYS300 - CELL & DEVELOPMENTAL BIOLOGY (4)
    - BYS300L - CELL & DEVELOPMENTAL BIO LAB
    - CH223 - QUANTITATIVE ANALYSIS (3)
    - CH224 - QUANTITATIVE ANALYSIS LAB (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES212L - LABORATORY
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 13 hours from:



- AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
- CH361 - GENERAL BIOCHEMISTRY (3)
- CH362 - GENERAL BIOCHEMISTRY LAB (1)
- CM113 - PUBLIC SPEAKING (3)
- 3 Hours Social & Behavioral Science

Year 4

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Fall

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- Complete all of the following
  - 14 hours from:
    - AES321 - POLLUTION PROBLEMS (3)
    - CH341 - PHYSICAL CHEMISTRY I (3)
    - CH345 - EXPERIMENTAL PHYSICAL CHEM I (1)
    - CH401 - INORGANIC CHEMISTRY (3)
    - CH421 - INSTRUMENTAL ANALYSIS (3)
    - CH422 - INSTRUMENTAL ANALYSIS LAB (1)
  - 3 Hours History

Spring

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- Complete all of the following
  - 7 hours from:
    - AES420 - INTRO ATMOSPHERIC CHEM & AIR POLLUT (3)
    - CH342 - PHYSICAL CHEMISTRY II (3)
    - CH402 - INORGANIC CHEMISTRY LAB (1)
  - 1 hours from:
    - CH491 - INTRO TO CHEMICAL RESEARCH (1)
    - CH492 - INTRO TO CHEMICAL RESEARCH (2)
    - CH493 - INTRO TO CHEMICAL RESEARCH (3)
  - 3 Hours 2nd History
  - 3 Hours Social & Behavioral Science
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

## **Chemistry (BS) - JUMP: BS CH, Chemistry (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Chemistry to an MS in Chemistry is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Chemistry (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CH@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Chemistry@uah.edu

## Chemistry (Minor)

### Program Description

The minor in Chemistry allows students to learn about the fundamentals of chemistry alongside majors such as Biology or Physics. It is well suited for students who want to broaden the knowledge of their major with some fundamental chemistry knowledge. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-undergraduate-programs>

### Number of Credit Hours

21

### Minor Requirements

Minor Requirements

21 - 22 Total Credits

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- Complete 1 of the following  
Chemistry Minor
  - Complete all of the following
    - Complete
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH223 - QUANTITATIVE ANALYSIS (3)
      - CH224 - QUANTITATIVE ANALYSIS LAB (1)
      - CH331 - ORGANIC CHEMISTRY I (3)
      - CH335 - ORGANIC CHEMISTRY LAB I (1)
      - CH332 - ORGANIC CHEMISTRY II (3)
    - Electives
    - Complete 1 of the following
      - Earned at least 1 of the following:
        - CH361 - GENERAL BIOCHEMISTRY (3)
        - CH341 - PHYSICAL CHEMISTRY I (3)
        - CH347 - BIOPHYSICAL CHEMISTRY I (3)
        - CH440 - POLYMER SYNTHESIS & CHARACTERI (3)
      - Complete all of the following
        - Complete
          - CH362 - GENERAL BIOCHEMISTRY LAB (1)
        - Earned at least 1 credits from CH
  - Complete all of the following
    - Complete
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
      - CH123 - GENERAL CHEMISTRY II (3)
      - CH126 - GENERAL CHEMISTRY LAB II (1)
      - CH331 - ORGANIC CHEMISTRY I (3)
      - CH335 - ORGANIC CHEMISTRY LAB I (1)
      - CH332 - ORGANIC CHEMISTRY II (3)
      - CH341 - PHYSICAL CHEMISTRY I (3)
    - Earned at least 1 of the following:
      - CH440 - POLYMER SYNTHESIS & CHARACTERI (3)
      - CH361 - GENERAL BIOCHEMISTRY (3)

Grand Total Credits: **21 - 22**

## Chemistry (MS)

### Program Description

The MS in Chemistry includes advanced lectures and laboratory work in organic chemistry, physical chemistry, inorganic chemistry, analytical chemistry, and a choice of either a biochemistry, polymer chemistry, or materials chemistry specialization. Students will gain leadership experience either as a graduate teaching assistant or supervision of undergraduate students as a graduate research assistant. Students will learn to effectively present chemical knowledge in writing, or deliver an effective oral presentation of their research. Graduates are well situated for satisfactory employment or enrollment in a PhD or professional degree program. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-graduate-programs>.

### Number of Credit Hours

30-33

### Degree Requirements

Degree Requirements

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- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

### Major Requirements

Course Requirements

15 Total Credits

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- Complete all of the following
  - Analytical
    - 3 hours from:
      - CH521 - CHEMICAL INSTRUMENTATION (3)
      - CH549 - SPECTROSCOPY & MOLEC STR (3)
      - CH621 - METHODS OF CHEMICAL ANALYSIS (3)
      - CH633 - ORGANIC STRUCTURE DETERMINAT'N (3)

- Inorganic
  - 3 hours from:
    - CH600 - ADV INORGANIC CHEMISTRY (3)
- Organic
  - 3 hours from:
    - CH631 - SYNTHETIC ORGANIC CHEMISTRY (3)
    - CH632 - PHYSICAL ORGANIC CHEMISTRY (3)
    - CH633 - ORGANIC STRUCTURE DETERMINAT'N (3)
    - CH634 - MOLECULAR MODELING (4)
- Physical Chemistry
  - 3 hours from:
    - CH640 - ADV CHEMICAL THERMODYNAMICS (3)
    - CH641 - STATIST THERMODYNAMICS (3)
    - CH642 - ADV CHEMICAL DYNAMICS (3)
    - CH643 - QUANTUM CHEMISTRY (3)
    - CH646 - THERMODYNAMICS OF MATRLS (3)
    - CH647 - ADV BIOPHYSICAL CHEMISTRY I (3)
    - CH648 - ADV BIOPHYSICAL CHEMISTRY II (3)
- Biochemistry Or Polymer
  - Complete 1 of the following
    - 3 hours from:
      - CH561 - BIOCHEMISTRY I (3)
      - CH562 - BIOCHEMISTRY II (3)
    - 3 hours from:
      - CH645 - POLYMER PHYSICAL CHEMISTRY (3)
  - CH 633 can only be applied to one area: Organic or Analytical Chemistry

#### Thesis/Non-Thesis Requirements

15 - 18 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students (Plan I)
    - Complete all of the following
      - 3 hours from the following:  
one course from your field of study
      - 6 hours from the following:  
two additional courses of choice
      - 6 hours from:
        - CH699 - MASTER'S THESIS (0 - 6)
  - Non-Thesis Seeking Students (Plan II)
    - Complete all of the following
      - 18 hours from the following:  
graduate coursework in chemistry or related fields
      - At least 18 semester hours out of the 33 total semester hours must be in Chemistry.
      - Plan II requires a program of study drawn up by the student and the Chemistry M.S. degree program advisor. Students must also complete two credit hours of CH 780. Plan II is not recommended for students seeking employment as industrial laboratory chemists because it does not require any experimental work.

Grand Total Credits: **30 - 33**

## **Chemistry (MS) - Education (Concentration)**

### **Description**

The MS in Chemistry with a concentration in Education leads to Class A Teaching Certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

## **Chemistry (PhD)**

### **Program Description**

The PhD in Chemistry provides students with three pathways: 1) academic, 2) entrepreneur, and 3) executive. The academic path provides students a traditional PhD experience with flexibility through a choice of core chemistry courses and individual, mentored courses. The proposed paths within this PhD program are not a simple PhD + MBA combination as found in a few other universities nationally; rather, the chemistry research is integrated within the non-chemistry coursework. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-graduate-programs>.

### **Number of Credit Hours**

66-75

### **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

## **Chemistry (PhD) - Academic Chemistry (Concentration)**

## **Description**

The PhD in Chemistry with an Academic Chemistry concentration provides students a traditional PhD experience with flexibility through a choice of core chemistry courses and individual, mentored courses. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-graduate-programs>.

## **Concentration Requirements**

Transfer Credits

0 Total Credits

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- Students who hold a MS degree in Chemistry or a related field are allowed to transfer up to 24 credit hours of applicable course work. Decisions on which credits are transferable are made by the department admissions committee.

Core Chemistry

27 Total Credits

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- Complete all of the following
  - 12 hours from the following:  
Organic, Inorganic, Physical, Biochemistry, Polymer and Instrumental
  - 9 hours from the following:  
Chemistry courses, including 6 hours of CH 700.
  - 6 hours from:
    - CH700 - CURRENT TOPICS IN CHEMISTRY (1 - 3)
  - Students should also attend and participate in Chemistry Seminars (CH 780); (1 credit hour per semester). These do not count towards the required total.

Electives

21 Total Credits

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- Complete all of the following
  - 21 hours from the following:  
Graduate-level courses in support of the student's research
  - Students are recommended to enroll in MGT 505, MGT 601, and MKT 604

Dissertation

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - CH799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **4-Year Plan**

### Year 1 Additional Requirements

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- Complete all of the following
  - Students are expected to take a minimum of nine (9) credit hours of didactic classes and seminars in the Fall and Spring semesters of the first year.
  - 
  - SUBMIT THE PROGRAM OF STUDY: Students are expected to decide on their research topic and identify a doctoral advisor within the first year. The advisor and the student will develop a Program of Study, which will be submitted to the Graduate School for approval by the Graduate Dean no later than the end of the second semester.

### Year 2 Additional Requirements

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- Complete all of the following
  - FORM A SUPERVISORY COMMITTEE AND FINALIZE THE PROGRAM OF STUDY: After a research topic has been formulated between the advisor and the student, a PhD committee is assembled that consists of the doctoral advisor and an additional four faculty members. The members of the committee can hold appointments in departments other than Chemistry but will have an intricate understanding of the research subject. Committee members can be chosen from other universities as long as they are registered as graduate faculty at UAH.
  - 
  - QUALIFYING EXAM: Students are expected to pass the Qualifying Exam after completing 18 hours of chemistry coursework, but no later than in the fourth semester. The Qualifying Exam consists of a research proposal, typically following the NSF proposal guidelines that lays out the scientific background and proposed experimental approach to the research topic. The student will defend the research proposal in front of the PhD committee. Upon the successful defense of the proposal, the student is expected to start taking dissertation hours (CH 799) and to continue to complete didactic hours of courses.
  - 
  - QUALIFYING EXAM PASS/FAIL CONDITIONS: Students who pass the Qualifying Exam can continue in the PhD program and may apply for a non-thesis Masters degree in Chemistry. Students who fail the Qualifying Exam cannot continue in the PhD program and may apply for a non-thesis Masters in Chemistry. The requirement for the Masters in Chemistry is to complete 33 credit hours.

### Year 3 and 4 Additional Requirements

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- Complete all of the following
  - DISSERTATION PREPARATION: Students will complete 18 credit hours of dissertation units (CH 799).
  - 
  - JOURNAL PUBLICATION: The student is encouraged to publish at least one publication during the course of the research work and before defending the Ph.D.
  - 
  - DISSERTATION DEFENSE: The dissertation must be defended publicly. All requirements for the doctoral degree must be completed in no more than five years after the student has passed the Qualifying Exam.

## **Chemistry (PhD) - Entrepreneurial Chemistry (Concentration)**

### **Description**

The PhD in Chemistry with an Entrepreneurial Chemistry concentration provides skills and training associated with small to medium enterprises and start-ups. This program includes a Graduate Certificate in Technology, Innovation Management & Entrepreneurship. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-graduate-programs>.



## **Concentration Requirements**

Transfer Credits

0 Total Credits

*keyboard\_arrow\_up*

- Students who hold an MS degree in Chemistry or a related field are allowed to transfer up to 24 credit hours of applicable coursework. Decisions on which credits are transferable are made by the department admissions committee.

Core Chemistry

27 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from the following:  
Organic, Inorganic, Physical, Biochemistry, Polymer and Instrumental
  - 9 hours from the following:  
Chemistry courses, including 6 hours of CH 700.
  - 6 hours from:
    - CH700 - CURRENT TOPICS IN CHEMISTRY (1 - 3)
  - Students should also attend and participate in Chemistry Seminars (CH 780); (1 credit hour per semester). These do not count towards the required total.

Electives

3 Total Credits

*keyboard\_arrow\_up*

- 3 hours from the following:  
Chemistry electives

Business Courses

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - MGT601 - TECH & INNOVATION MGMT (3)
  - MKT604 - NEW PRODUCT DEVELOPMENT (3)
  - MKT606 - MKT IN HIGH TECH ENVIRON (3)
  - MGT631 - HRM & ORGANIZATIONAL BEHAVIOR (3)
  - MGT640 - PRIN OF PROJECT MGMT (3)
  - MGT629 - LEADERSHIP: THRY & PRACTICE (3)

Dissertation

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - CH799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## **4-Year Plan**

### Year 1 Additional Requirements

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- Complete all of the following
  - Students are expected to take a minimum of nine (9) credit hours of didactic classes and seminars in the Fall and Spring semesters of the first year.
  - 
  - SUBMIT THE PROGRAM OF STUDY: Students are expected to decide on their research topic and identify a doctoral advisor within the first year. The advisor and the student will develop a Program of Study, which will be submitted to the Graduate School for approval by the Graduate Dean no later than the end of the second semester.

### Year 2 Additional Requirements

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- Complete all of the following
  - FORM A SUPERVISORY COMMITTEE AND FINALIZE THE PROGRAM OF STUDY: After a research topic has been formulated between the advisor and the student, a PhD committee is assembled that consists of the doctoral advisor and an additional four faculty members. The members of the committee can hold appointments in departments other than Chemistry but will have an intricate understanding of the research subject. Committee members can be chosen from other universities as long as they are registered as graduate faculty at UAH.
  - 
  - QUALIFYING EXAM: Students are expected to pass the Qualifying Exam after completing 18 hours of chemistry coursework, but no later than in the fourth semester. The Qualifying Exam consists of a research proposal, typically following the NSF proposal guidelines that lays out the scientific background and proposed experimental approach to the research topic. The student will defend the research proposal in front of the PhD committee. Upon the successful defense of the proposal, the student is expected to start taking dissertation hours (CH 799) and to continue to complete didactic hours of courses.
  - 
  - QUALIFYING EXAM PASS/FAIL CONDITIONS: Students who pass the Qualifying Exam can continue in the PhD program and may apply for a non-thesis Masters degree in Chemistry. Students who fail the Qualifying Exam cannot continue in the PhD program and may apply for a non-thesis Masters in Chemistry. The requirement for the Masters in Chemistry is to complete 33 credit hours.

### Year 3 and 4 Additional Requirements

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- Complete all of the following
  - DISSERTATION PREPARATION: Students will complete 18 credit hours of dissertation units (CH 799).
  - 
  - JOURNAL PUBLICATION: The student is encouraged to publish at least one publication during the course of the research work and before defending the Ph.D.
  - 
  - DISSERTATION DEFENSE: The dissertation must be defended publicly. All requirements for the doctoral degree must be completed in no more than five years after the student has passed the Qualifying Exam.

## **Chemistry (PhD) - Executive Chemistry (Concentration)**

### **Description**

The PhD in Chemistry with an Executive Chemistry concentration is designed to provide training for large industry and multinationals and includes a certified MBA and requires a Masters in Chemistry or equivalent. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/chemistry/ch-graduate-programs>.

## **Concentration Requirements**

Transfer Credits

0 Total Credits

*keyboard\_arrow\_up*

- Students are allowed to transfer up to 24 credit hours of applicable course work. Decisions on which credits are transferable are made by the department admissions committee.

Core Chemistry

18 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 12 hours from the following:  
Organic, Inorganic, Physical, Biochemistry, Polymer and Instrumental. Students with a suitable pre-existing graduate degree may substitute these courses for 'Current Topics in Chemistry' (CH700).
  - 6 hours from:
    - CH700 - CURRENT TOPICS IN CHEMISTRY (1 - 3)
  - Students should also attend and participate in Chemistry Seminars (CH 780); (1 credit hour per semester). These do not count towards the required total.

Electives

3 Total Credits

*keyboard\_arrow\_up*

- 3 hours from the following:  
Chemistry electives

Core MBA

36 Total Credits

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- Complete all of the following
  - Earned at least 36 credits from: MBA MGT
  - With agreement from advisor, students may substitute MSC 600 for MGT 640 or CH 700.

Dissertation

18 Total Credits

*keyboard\_arrow\_up*

- 18 hours from:
  - CH799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **75**

## **4-Year Plan**

### Year 1 Additional Requirements

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- Complete all of the following
  - Students are expected to take a minimum of nine (9) credit hours of didactic classes and seminars in the Fall and Spring semesters of the first year.
  - 
  - SUBMIT THE PROGRAM OF STUDY: Students are expected to decide on their research topic and identify a doctoral advisor within the first year. The advisor and the student will develop a Program of Study, which will be submitted to the Graduate School for approval by the Graduate Dean no later than the end of the second semester.

### Year 2 Additional Requirements

*keyboard\_arrow\_up*

- Complete all of the following
  - FORM A SUPERVISORY COMMITTEE AND FINALIZE THE PROGRAM OF STUDY: After a research topic has been formulated between the advisor and the student, a PhD committee is assembled that consists of the doctoral advisor and an additional four faculty members. The members of the committee can hold appointments in departments other than Chemistry but will have an intricate understanding of the research subject. Committee members can be chosen from other universities as long as they are registered as graduate faculty at UAH.
  - 
  - QUALIFYING EXAM: Students are expected to pass the Qualifying Exam after completing 18 hours of chemistry coursework, but no later than in the fourth semester. The Qualifying Exam consists of a research proposal, typically following the NSF proposal guidelines that lays out the scientific background and proposed experimental approach to the research topic. The student will defend the research proposal in front of the PhD committee. Upon the successful defense of the proposal, the student is expected to start taking dissertation hours (CH 799) and to continue to complete didactic hours of courses.
  - 
  - QUALIFYING EXAM PASS/FAIL CONDITIONS: Students who pass the Qualifying Exam can continue in the PhD program and may apply for a non-thesis Masters degree in Chemistry. Students who fail the Qualifying Exam cannot continue in the PhD program and may apply for a non-thesis Masters in Chemistry. The requirement for the Masters in Chemistry is to complete 33 credit hours.

### Year 3 and 4 Additional Requirements

*keyboard\_arrow\_up*

- Complete all of the following
  - DISSERTATION PREPARATION: Students will complete 18 credit hours of dissertation units (CH 799).
  - 
  - JOURNAL PUBLICATION: The student is encouraged to publish at least one publication during the course of the research work and before defending the Ph.D.
  - 
  - DISSERTATION DEFENSE: The dissertation must be defended publicly. All requirements for the doctoral degree must be completed in no more than five years after the student has passed the Qualifying Exam.

## **Computational Physics (Graduate Certificate)**

### **Program Description**

Computational science is one of the cornerstones of modern research. Challenges facing today's scientists and engineers demand full command of both mathematical methods and advanced supercomputing techniques. This program teaches a variety of numerical computation techniques for continuum models, particle-mesh models, and stochastic models using modern programming languages. The program promotes hands-on learning experience and features highly interactive classroom sessions. The program is mainly intended for Space Science PhD students, but is also accessible to students from other science and engineering disciplines with sufficient math and physics background.

### **Number of Credit Hours**

19

### **Major Requirements**

- Complete
  - CS521 - INTENSIVE INTRO PROGRAMMING (4)
  - SPA662 - COMPUTATIONAL PHYSICS (3)
  - SPA663 - COMPUTATIONAL FLUID DYNMC &MHD (3)
  - SPA664 - COMPUTATIONAL PLASMA PHYSICS (3)
  - SPA665 - STOCHASTIC METHODS COMP SCI (3)
  - SPA666 - SUPERCOMPUTER LAB (3)

Grand Total Credits: **19**

## Computer Languages & Systems (Minor)

### Program Description

The minor in Computer Languages and Systems focuses on the programming/software engineering core of Computer Science. This minor is suitable for students who are majoring in a non-technical background with minimal mathematics. Although not as comprehensive in the field of Computing as the BS in Computer Science, and significantly less technical than the Minor in Computer Science, this minor prepares students for many programming/software engineering jobs in industry. For further information, please refer to the department web site at <https://www.uah.edu/science/degree-programs/minors>.

### Number of Credit Hours

21

### Minor Requirements

Prerequisites

0 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - Complete one of the MA courses listed below:
    - MA113 - PRECALCULUS TRIGONOMETRY (3)
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - MA 113, Precalculus Trigonometry, or higher math is required. MA 171, Calculus A is strongly recommended.

Minor Requirements

21 Total Credits

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- Complete all of the following
  - Complete
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS121 - COMPUTER SCIENCE I (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - 6 hours from any CS 300 - 400 level course(s)
  - 3 hours from any CS 400 - level course(s)

Grand Total Credits: **21**

## Computer Science (BS)

### Program Description

The BS in Computer Science prepares students to solve problems using the logical foundations of computing that examines the theory, design, development, and applications of computer systems and computer software. It is fully accredited by the Computing Accreditation Commission of ABET. Students pursuing the BS in Computer Science can specialize in areas such as cybersecurity, machine learning and artificial intelligence, cloud computing, computer graphics, database, data science, gaming and entertainment computing, computer theory, software engineering, and web programming. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/computer-science/cs-undergraduate-programs>

### Number of Credit Hours

120

### General Education (Charger Foundations) Requirements

## Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

## Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

## Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II
    - Complete all of the following
      - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARS160 - DRAWING: FOUNDATIONS (3)
        - MU100 - INTRO TO MUSIC LITERATURE (3)
        - TH122 - THEATRE APPRECIATION (3)
        - FMA123 - INTRO TO FILM STUDIES (3)
      - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
        - EH207 - READINGS LITERATURE/CULTURE I (3)
        - EH208 - READINGS LITERATURE/CULTURE 2 (3)
        - EH241 - LITERATURE WITHOUT BORDERS (3)
        - EH242 - MYTHOLOGY (3)
        - EH243 - PROTEST LITERATURE (3)
        - EH244 - HEROES &/OR MONSTERS (3)
        - EH245 - LOVE &/OR ROMANCE (3)
        - EH246 - SPECULATIVE REALITIES (3)
      - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
        - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
        - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
        - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
        - ARH103 - ARH SUR: WORLD ART (3)
        - ARH120 - ARH SUR: SPECIAL TOPICS (3)

- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)



- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- Computer Science Students are required to take either PHL 102 or PHL 150 to satisfy Area II Requirements

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)
- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following

- 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

36 Total Credits

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- Complete all of the following
  - First Year Experience
    - 1 hours from:
      - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Computer Programming
    - 3 hours from:
      - CS102 - INTRO TO C PROGRAMMING (3)
      - CS103 - INTRO PROGRAMMING USING JAVA (3)
      - CS104 - INTRO TO CS USING PYTHON (3)
  - Ethics
    - 3 hours from:
      - PHL102 - INTRO TO ETHICS (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - Mathematics
    - Complete all of the following
      - 18 hours from:
        - MA171 - CALCULUS I (4)
        - MA172 - CALCULUS II (4)
        - MA201 - CALCULUS III (4)
        - MA244 - INTRO TO LINEAR ALGEBRA (3)
        - MA385 - INTRO TO PROBABILITY & STATIST (3)
      - Based on Math placement, prerequisite (MA 112 and/or MA 113) Mathematics courses may be required.
  - Natural Sciences
    - Complete 1 of the following
      - 8 hours from:
        - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
        - AES103L - LABORATORY
        - AES104 - WEATHER & CLIMATE CHANGE (4)
        - AES104L - LABORATORY
      - 8 hours from:
        - BYS119 - PRINCIPLES OF BIOLOGY (3)
        - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
        - BYS120 - ORGANISMAL BIOLOGY (3)
        - BYS122 - ORGANISMAL BIOLOGY LAB (1)
      - 8 hours from:
        - CH121 - GENERAL CHEMISTRY I (3)
        - CH125 - GENERAL CHEMISTRY LAB I (1)
        - CH123 - GENERAL CHEMISTRY II (3)
        - CH126 - GENERAL CHEMISTRY LAB II (1)
      - 8 hours from:
        - PH111 - GEN PHYSICS W/CALCULUS I (3)
        - PH114 - GENERAL PHYSICS LAB I (1)
        - PH112 - GEN PHYSICS W/CALC II (3)
        - PH115 - GENERAL PHYSICS LAB II (1)
  - Technical Elective
    - 3 hours from:
      - EH301 - TECHNICAL WRITING (3)

Grand Total Credits: **36**

## **Major Requirements**

Core Requirements

30 Total Credits

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- 30 hours from:
  - CS121 - COMPUTER SCIENCE I (3)
  - CS214 - INTRO DISCRETE STRUCTURE (3)
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
  - CS309L - LABORATORY
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
  - CS413L - LABORATORY
  - CS424 - PRINCIPLES PROGRAMMING LANG (3)
  - CS490 - INTRO TO OPERATING SYSTEMS (3)
  - CS499 - SR PROJ:TEAM SOFTWARE DESIGN (3)

Grand Total Credits: **30**

## **Computer Science (BS) - Computer Science, General (Concentration)**

### **Description**

The BS in Computer Science with a General concentration is the path for students pursuing the degree without also pursuing concentration in web programming, data science, or entertainment computing. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/computer-science>.

### **Concentration Requirements**

Requirements

15 Total Credits

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- Complete all of the following
  - 9 hours from any CS 300 - 400 level course(s)
  - 6 hours from any CS 400 - level course(s)
  - Occasionally a Computer Engineering or Math Course may be used with prior approval by the Computer Science department. However, courses considered substantially duplicate courses will not both be allowed. For example: CS 370 & CPE 348, CS 307 & CPE 353, CS 485 & CPE 449.
  - IS 460 is an allowed Computer Science elective; however, if taken it will count as a 300-level Computer Science elective and not a 400-level Computer Science elective.

Grand Total Credits: **15**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 4 hours from:
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)

- HON101 - INTRO TO HONORS RESEARCH (1)
- 3 hours from:
  - CS102 - INTRO TO C PROGRAMMING (3)
  - CS104 - INTRO TO CS USING PYTHON (3)
- 3 hours from:
  - EH101 - COLLEGE WRITING I (3)
  - EH105 - HONORS ENGLISH SEMINAR (3)
- 3 Hours Fine Art

Spring

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- Complete all of the following
  - 7 hours from:
    - CS121 - COMPUTER SCIENCE I (3)
    - MA172 - CALCULUS II (4)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 10 hours from:
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - MA201 - CALCULUS III (4)
  - 3 Hours Literature
  - 3 Hours History

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 9 hours from:
    - CS309 - COMPUTER ORG & SWITCHNG THRY (3)
    - CS309L - LABORATORY
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - 3 Hours Computer Science Elective (CS 300+ or 400+ Course)
  - 3 Hours 2nd History

Year 3

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Fall

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- Complete all of the following

- 6 hours from:
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - MA385 - INTRO TO PROBABILITY & STATIST (3)
- 3 Hours Computer Science Elective (CS 300+ or 400+ course) \*CS 307 & CS 370 are strongly recommended
- 4 Hours Lab Science
- 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Spring

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from:
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS413L - LABORATORY
  - 3 Hours Computer Science Elective (CS 300+ or 400+ course) CS 307 & CS 370 are strongly recommended
  - 4 Hours Lab Science
  - 3 Hours Social & Behavioral Science

Year 4

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Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - CS424 - PRINCIPLES PROGRAMMING LANG (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 Hours Computer Science Elective (CS 400+ Course)
  - 6 Hours General Electives

Spring

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- Complete all of the following
  - 6 hours from:
    - CS490 - INTRO TO OPERATING SYSTEMS (3)
    - CS499 - SR PROJ:TEAM SOFTWARE DESIGN (3)
  - 3 Hours Computer Science Elective (CS 400+ Course)
  - 6 Hours General Electives

## Computer Science (BS) - Cybersecurity (Concentration)

### Concentration Requirements

Concentration Requirements

12 Total Credits

*keyboard\_arrow\_up*

- 12 hours from:
  - CS370 - INTRO COMPUTER NETWORKS (3)
  - CS465 - NETWORK SECURITY (3)
  - CS480 - MOBILE DIGITAL FORENSICS (3)
  - CS485 - INTRO CYBERSECURITY ENGR (3)

Major Electives

3 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 3 hours from any CS 300 - 400 level course(s)
  - Occasionally a Computer Engineering or Math Course may be used with prior approval by the Computer Science department. However, courses considered substantially duplicate courses will not both be allowed. For example: CS 370 & CPE 348, CS 307 & CPE 353, CS 485 & CPE 449.
  - IS 460 is an allowed Computer Science elective; however, if taken it will count as a 300-level Computer Science elective and not a 400-level Computer Science elective.

Grand Total Credits: **15**

## Computer Science (BS) - Data Science (Concentration)

### Description

The BS in Computer Science with a concentration in Data Science equips students with the foundational knowledge and skills needed to analyze large quantities of structured and unstructured data using computation and mathematics. By exploring diverse data sources, students learn how to uncover insights and interpret data, which can be applied across various domains. Graduates are prepared for roles such as Business Intelligence Developer, Applications Architect, and Enterprise Architect, among others. Graduates will possess the ability to analyze different types of data, including business or scientific data, generate reports to support decision-making processes, and contribute to data analytics initiatives. For further information, please refer to the department website at

<https://www.uah.edu/science/departments/computer-science/cs-undergraduate-programs>



## **Concentration Requirements**

### Concentration Requirements

9 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from:
    - CS430 - SURVEY ARTIFICIAL INTELLIGENCE (3)
    - CS488 - INTRO TO BIG DATA COMPUTING (3)
  - 3 hours from:
    - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
    - CS445 - INTRO COMPUTER GRAPHICS (3)
    - CS454 - INTRO TO CLOUD COMPUTING (3)
    - CS481 - MODELING & SIMULATION I (3)
    - CS482 - MODELING & SIMULATION II (3)
    - CS487 - DATABASE SYSTEMS (3)

### Major Electives

6 Total Credits

*keyboard\_arrow\_up*

- Complete all of the following
  - 6 hours from any CS 300 - 400 level course(s)
  - Occasionally a Computer Engineering or Math Course may be used with prior approval by the Computer Science department. However, courses considered substantially duplicate courses will not both be allowed. For example: CS 370 & CPE 348, CS 307 & CPE 353, CS 485 & CPE 449.
  - IS 460 is an allowed Computer Science elective; however, if taken it will count as a 300-level Computer Science elective.

Grand Total Credits: **15**

## **4-Year Plan**

### Year 1

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### Fall

*keyboard\_arrow\_up*

- Complete all of the following
  - 4 hours from:
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)

### Spring

*keyboard\_arrow\_up*

- Complete all of the following

- 7 hours from:
  - CS121 - COMPUTER SCIENCE I (3)
  - MA172 - CALCULUS II (4)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 3 Hours Fine Art
- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 10 hours from:
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - MA201 - CALCULUS III (4)
  - 3 Hours Literature
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 9 hours from:
    - CS309 - COMPUTER ORG & SWITCHNG THRY (3)
    - CS309L - LABORATORY
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - 3 Hours Computer Science Elective (CS 300+ or 400+ Course) CS 307 Strongly Recommended
  - 4 Hours Lab Science

Year 3

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Fall

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- Complete all of the following
  - 6 hours from:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - 3 Hours Computer Science Elective (CS 300+ or 400+ Course) CS 370 Strongly Recommended
  - 3 Hours History
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS413L - LABORATORY
    - CS424 - PRINCIPLES PROGRAMMING LANG (3)
  - 3 Hours 2nd History

- 3 Hours Social & Behavioral Science
- 3 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 9 hours from:
    - CS430 - SURVEY ARTIFICIAL INTELLIGENCE (3)
    - CS488 - INTRO TO BIG DATA COMPUTING (3)
    - EH301 - TECHNICAL WRITING (3)
  - 6 Hours General Electives

Spring

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- Complete all of the following
  - 6 hours from:
    - CS490 - INTRO TO OPERATING SYSTEMS (3)
    - CS499 - SR PROJ:TEAM SOFTWARE DESIGN (3)
  - 3 hours from:
    - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
    - CS445 - INTRO COMPUTER GRAPHICS (3)
    - CS454 - INTRO TO CLOUD COMPUTING (3)
    - CS481 - MODELING & SIMULATION I (3)
    - CS482 - MODELING & SIMULATION II (3)
    - CS487 - DATABASE SYSTEMS (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

## **Computer Science (BS) - Entertainment Computing (Concentration)**

### **Description**

The BS in Computer Science with a concentration in Entertainment Computing examines methodologies and tools to support entertainment related applications, including video games and multimedia applications. Students from this program are well prepared to work as video game developers, but the skills students acquire from this program also apply to jobs in serious games, virtual reality, and modeling and simulation. For further information, please refer to the department website at

<https://www.uah.edu/science/departments/computer-science/cs-undergraduate-programs>

## **Concentration Requirements**

Requirements

18 Total Credits

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- Complete all of the following
  - 9 hours from:
    - CS330 - ARTFCL INTEL & GAME DEV (3)
    - CS347 - INTRO VIDEO GAME DESGN & PROGM (3)
    - CS445 - INTRO COMPUTER GRAPHICS (3)
  - 6 hours from:
    - CS371 - MOBILE COMPUTING APP INCT & D (3)
    - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
    - CS446 - ADVANCED COMPUTER GRAPHICS (3)

Dramatic Media Elements

- 3 hours from:
  - ARS220 - ANIMATION: INTRODUCTION (3)
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - ARS321 - ANIMATION: ORGANIC MODELING (3)
  - ARS322 - ANIMATION: 3D ANIMATION (3)
  - ARS324 - ANIMATION: TECHNICAL ARTS (3)
  - ARS327 - ANIMATION: VISUAL STORY DEV (3)
  - ARS328 - ANIMATION: CONCEPT ART (3)
  - ARS334 - GRAPH DES: WEB USER EXPER I (3)
  - ARS350 - PHOTO: DIGITAL I (3)
  - ARS355 - PHOTO: DOCUMENTARY I (3)
  - Course Not Found
  - MU306 - MUSIC TECHNOLOGY IV (3)
  - CM340 - SPEC TOPICS IN COMM ARTS (3)
  - EH410 - FICTION WRITING (3)
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)

Grand Total Credits: **18**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 4 hours from:
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 hours from the following:
    - General Elective

Spring

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- Complete all of the following
  - 10 hours from:
    - CS121 - COMPUTER SCIENCE I (3)
    - EH102 - COLLEGE WRITING II (3)
    - MA172 - CALCULUS II (4)
  - 3 hours from the following:  
Fine Art
  - 3 hours from the following:  
Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 10 hours from:
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - MA201 - CALCULUS III (4)
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - 3 hours from the following:  
History

Spring

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- Complete all of the following
  - 9 hours from:
    - CS309 - COMPUTER ORG & SWITCHNG THRY (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CS309L - LABORATORY
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - 3 hours from the following:  
History
  - 3 hours from the following:  
General Electives

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS347 - INTRO VIDEO GAME DESGN & PROGM (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - 3 hours from the following:  
Dramatic Media Elements Course
  - 4 hours from the following:

## Lab Science

Spring

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- Complete all of the following
  - 6 hours from:
    - CS330 - ARTFCL INTEL & GAME DEV (3)
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS413L - LABORATORY
  - 3 hours from the following:  
Social & Behavioral Science
  - 3 hours from the following:  
Literature
  - 4 hours from the following:  
Lab Science

Year 4

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Fall

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- Complete all of the following
  - 12 hours from:
    - CS371 - MOBILE COMPUTING APP INCT & D (3)
    - CS424 - PRINCIPLES PROGRAMMING LANG (3)
    - CS445 - INTRO COMPUTER GRAPHICS (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from the following:  
General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - CS490 - INTRO TO OPERATING SYSTEMS (3)
    - CS499 - SR PROJ:TEAM SOFTWARE DESIGN (3)
  - 3 hours from:
    - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
    - CS446 - ADVANCED COMPUTER GRAPHICS (3)
  - 3 hours from the following:  
Humanities, 2nd Fine Art or 2nd Literature

## **Computer Science (BS) - JUMP: BS CS, Computer Science (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Computer Science to an MS in Computer Science is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Computer Science (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CS@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_ComputerScience@uah.edu

## **Computer Science (BS) - JUMP: BS CS, Cyber Security - Computer Science Track (MSCBS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Computer Science to an MSCBS in Cyber Security - Computer Science track is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **Approved Master's Program**

Cybersecurity (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CS@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Cyber\_CS@uah.edu

## **Computer Science (BS) - JUMP: BS CS, MSCBS in Cyber Security - Business Track**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Computer Science to an MSCBS in Cyber Security - Business track is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees.

### **Approved Master's Program**

Cybersecurity (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CS@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Cyber\_IS@uah.edu@uah.edu



## **Computer Science (BS) - JUMP: BS CS, MSIS**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Computer Science to an MSIS in Information Systems is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees

### **Approved Master's Program**

Information Systems (MSIS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CS@uah.edu

### **JUMP Landing (Graduate Program)**

MSIS\_IS@uah.edu

## **Computer Science (BS) - JUMP: BS CS, Software Engineering - Computer Science Track (MSSE)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Computer Science to an MSSE in Software Engineering - Computer Science track is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Computer Science (MSSE)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_CS@uah.edu

### **JUMP Landing (Graduate Program)**

MSSE\_ComputerScience@uah.edu

## **Computer Science (BS) - Web Programming (Concentration)**

### **Description**

The BS in Computer Science with a concentration in Web Programming prepares students to work on the appearance, layout, content, and behavior of websites. This program allow students to create dynamic and adaptive web sites. Through a partnership with the UAH Art department (Graphic Design), students also learn how to design the aesthetics of websites, including their appearance and layout. For further information, please refer to the department website at <https://www.uah.edu/science/departments/computer-science/cs-undergraduate-programs>

## **Concentration Requirements**

### Concentration Requirements

12 Total Credits

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- Complete all of the following
  - 9 hours from:
    - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
    - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
    - CS453 - CLIENT/SERVER ARCHITECTURES (3)
  - 3 hours from:
    - CS370 - INTRO COMPUTER NETWORKS (3)
    - CS485 - INTRO CYBERSECURITY ENGR (3)
    - CS487 - DATABASE SYSTEMS (3)

### Major Electives

3 Total Credits

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- Complete all of the following
  - 3 hours from any CS 300 - 400 level course(s)
  - Occasionally a Computer Engineering or Math Course may be used with prior approval by the Computer Science department. However, courses considered substantially duplicate courses will not both be allowed. For example: CS 370 & CPE 348, CS 307 & CPE 353, CS 485 & CPE 449.
  - IS 460 is an allowed Computer Science elective; however, if taken it will count as a 300-level Computer Science elective and not a 400-level Computer Science elective.

Grand Total Credits: **15**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 7 hours from:
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MA171 - CALCULUS I (4)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

### Spring

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- Complete all of the following
  - 10 hours from:
    - ARS123 - 2D DESIGN & COLOR THEORY (3)
    - CS121 - COMPUTER SCIENCE I (3)
    - MA172 - CALCULUS II (4)

- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)
- 3 Hours Social & Behavioral Science

Year 2

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Fall

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- Complete all of the following
  - 13 hours from:
    - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - MA201 - CALCULUS III (4)
  - 3 Hours History

Spring

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- Complete all of the following
  - 9 hours from:
    - CS309 - COMPUTER ORG & SWITCHNG THRY (3)
    - CS309L - LABORATORY
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - 3 Hours 2nd History
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS370 - INTRO COMPUTER NETWORKS (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - 3 hours from:
    - PHL102 - INTRO TO ETHICS (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
  - 4 Hours Lab Science

Spring

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- Complete all of the following
  - 9 hours from:
    - ARS332 - GRAPHIC DESIGN: WEB DESIGN (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS413L - LABORATORY
  - 4 Hours Lab Science

Year 4

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Fall

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- Complete all of the following
  - 6 hours from:
    - CS453 - CLIENT/SERVER ARCHITECTURES (3)
    - EH301 - TECHNICAL WRITING (3)
  - 3 hours from:
    - CS485 - INTRO CYBERSECURITY ENGR (3)
    - CS487 - DATABASE SYSTEMS (3)
  - 3 Hours Computer Science Elective (CS 300+ or 400+ Course)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

Spring

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- Complete all of the following
  - 9 hours from:
    - CS424 - PRINCIPLES PROGRAMMING LANG (3)
    - CS490 - INTRO TO OPERATING SYSTEMS (3)
    - CS499 - SR PROJ:TEAM SOFTWARE DESIGN (3)
  - 3 Hours Social & Behavioral Science
  - 3 Hours General Elective

## **Computer Science, Intensive Core (Certificate)**

### **Program Description**

Persons working in numerous disciplines can require substantial knowledge of computing, including computer programming as well as computer theory, and the basics of computer hardware and operating systems. For example, persons working in graduate degree programs in mathematics, biology, mechanical engineering, and many others may need extensive computing background. Also, persons in numerous disciplines may need the background required to take some graduate courses in the computer science department, they may want to take courses in data science, cybersecurity, etc.

This certificate is intended to provide a computer science credential for students who take 3 intensive computing courses, provided by the Computer Science department. These courses are needed by persons in many disciplines; providing this credential should give a reason for students to take the full 3 course set of these intensive courses. This additional computer science knowledge will help them better do their job in their own disciplines.

### **Number of Credit Hours**

12

### **Major Requirements**

- 12 hours from:
  - CS513 - INTENSIVE COMP ARCH & OS (4)
  - CS517 - INTENSIVE COMPUTING THEORY (4)
  - CS521 - INTENSIVE INTRO PROGRAMMING (4)

Grand Total Credits: **12**

## Computer Science (Minor)

### Program Description

The minor in Computer Science focuses on the programming/software engineering and algorithmic core of Computer Science. It prepares students who major in a technical field to apply computer science programming/software engineering and code analysis techniques to their technical applications. Although not as comprehensive in the field of computing as a BS in Computer Science, this minor prepares students for many jobs in the computing industry. At least two courses that are included as part of the Computer Science minor must not be part of any other major or minor, that is, they may not be double counted toward two programs. For further information, please refer to the department website at <https://www.uah.edu/science/degree-programs/minors>.

### Number of Credit Hours

22

### Minor Requirements

Prerequisites

0 Total Credits

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- Complete all of the following
  - Calculus I
    - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)
  - MA172 - CALCULUS II (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

Minor Requirements

21 Total Credits

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- Complete all of the following
  - Complete
    - CS121 - COMPUTER SCIENCE I (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - 3 hours from any CS 300 - 400 level course(s)
  - CS 309 is recommended if considering an MS in Computer Science
  - 3 hours from any CS 400 - level course(s)
  - CS 413 and CS 490 are recommended if considering an MS in Computer Science

Grand Total Credits: **21**

## Computer Science (MS)

## **Program Description**

The MS in Computer Science examines the theory, design, development, and applications of computer systems and computer software. The focus is on problem solving through the logical foundations of computing. The program encompasses teaching and research in advanced areas including: cybersecurity, machine learning and artificial intelligence, cloud computing, databases, data science, gaming and entertainment computing, computer theory, and software engineering. For further information, please visit the department web site at

<https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

## **Number of Credit Hours**

33

## **Degree Requirements**

Degree Requirements

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- Complete all of the following
  - Graduate School Degree Requirements
    - Complete all of the following
      - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
      - No grade of D or F may be counted toward a graduate degree.
      - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
      - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

CS Breadth Requirements

- Complete all of the following
  - Applicants to graduate programs in Computer Science must satisfy the following breadth requirements before admission to the program.
  - The breadth requirements can be satisfied in one of the following ways: Completion of the course at UAH with a grade of B or better; Completion of an equivalent course at another institution with a grade of B or better; Testing out of the course, where permitted by departmental policy
- 14 hours from:
  - MA171 - CALCULUS I (4)
  - MA172 - CALCULUS II (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - MA385 - INTRO TO PROBABILITY & STATIST (3)

Computer Science

- 24 hours from:
  - CS121 - COMPUTER SCIENCE I (3)
  - CS214 - INTRO DISCRETE STRUCTURE (3)
  - CS221 - COMP SCI II: DATA STRUCTURES (3)
  - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
  - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
  - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
  - CS490 - INTRO TO OPERATING SYSTEMS (3)
- A grade of B or better must be earned in each of the core courses.
- No more than 50 percent of the hours in the program of study may be 500-level courses
- No more than three semester hours of selected topics or independent study courses may be included in a program of study. Exceptions must be recommended by the student's advisor and approved by the department chair.
- All courses taken as part of the M.S. in Computer Science will normally be Computer Science courses. Any courses outside the Computer Science department must be approved in advance by a Computer Science advisor. Historically, this has been the advisement practice in Computer Science. This is simply making sure that students are fully aware of the expectations of the Computer Science department, even before meeting with an advisor.



## **Major Requirements**

### Core Requirements

9 Total Credits

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- Complete all of the following
  - 3 hours from:
    - CS617 - DES & ANALY OF ALGORITHM (3)
  - 3 hours from:
    - CS613 - COMPUTER ARCHITECTURES (3)
    - CS690 - ADVANCED OPERATING SYSTEMS (3)
  - 3 hours from:
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS687 - DATABASE SYSTEMS (3)
  - If a student has not had an undergraduate course in programming languages, CS 524 must be included in the program of study.

### Thesis/Non-Thesis

21 - 24 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students (Plan I)
    - Complete all of the following
      - Concentration
        - Complete 1 of the following
          - 15 hours from any CS 500 - 700 level course(s)
          - hours from the following:
            - Optional Concentrations
      - 6 hours from:
        - CS699 - MASTER'S THESIS (0 - 6)
      - A student must present his/her thesis and pass an oral examination based on the thesis and related coursework. Plan I students must register for CS 699 each term they receive supervision from their advisor.
  - Non-Thesis Seeking Students (Plan II)
    - Complete all of the following
      - Concentration
        - Complete 1 of the following
          - 15 hours from any CS 500 - 700 level course(s)
          - 15 hours from the following:
            - Optional Concentrations
        - 9 hours from any CS 500 - 700 level course(s)

Grand Total Credits: **30 - 33**

## Computer Science (MS) - Cybersecurity (Concentration)

### Description

The MS in Computer Science with a concentration in Cybersecurity. For further information, please visit the department web site at <https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

### Concentration Requirements

Required Courses

9 Total Credits

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- Complete all of the following
  - 3 hours from:
    - CS585 - INTRO CYBERSECURITY ENGR (3)
    - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
  - 3 hours from:
    - CS670 - WIRELESS SENSOR NETWORKS (3)
    - CPE646 - WIRELESS SENSOR NETWORKS (3)
  - 3 hours from:
    - CS685 - APPLIED CRYPTOGRAPHY (3)
    - CPE645 - APPLIED CRYPTOGRAPHY (3)

Concentration Electives

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - CPE555 - SECURE SOFTWARE DEV (3)
    - CPE557 - SOFTWARE REVERSE ENGR (3)
    - CPE559 - SYSTEMS SECURITY (3)
    - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
  - 3 hours from:
    - CS681 - MALWARE ANALYSIS (3)
    - CS565 - NETWORK SECURITY (3)
    - CS580 - MOBILE DIGITAL FORENSICS (3)
    - CS588 - INTRO TO BIG DATA COMPUTING (3)
    - CS640 - MACHINE LEARNING (3)
    - CS641 - DATA MINING (3)

Grand Total Credits: **15**

## Computer Science (MS) - Data Science (Concentration)

### Description

The MS in Computer Science with a concentration in Data Science provides an advanced and in-depth exploration of the computational and mathematical aspects of data analysis as well as the development of advanced skills in statistical modeling, machine learning, and data manipulation. Students delve into sophisticated techniques to analyze large volumes of structured and unstructured data, extracting valuable insights and interpreting complex information. In addition to the applications mentioned in the BS concentration, the MS concentration prepares students for more advanced work in roles such as Business Intelligence Developer, Applications Architect, and Enterprise Architect, among others. Graduates from this program possess the expertise to engage in more advanced data analysis, including complex business and scientific datasets. For further information, please visit the department web site at

<https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

### Concentration Requirements

Concentration Requirements

15 Total Credits

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- Complete all of the following
  - Computational Statistics/Algorithm Design
    - 6 hours from:
      - CS588 - INTRO TO BIG DATA COMPUTING (3)
      - CS617 - DES & ANALY OF ALGORITHM (3)
    - Group A
      - 6 hours from:
        - CS637 - DEEP LEARNING (3)
        - CS640 - MACHINE LEARNING (3)
        - CS641 - DATA MINING (3)
        - CS687 - DATABASE SYSTEMS (3)
      - Group B
        - 3 hours from:
          - CS530 - SURVEY ARTIFICIAL INTELLIGENCE (3)
          - CS543 - INTRO TO MULTIMEDIA SYSTEMS (3)
          - CS545 - INTRO COMPUTER GRAPHICS (3)
          - CS554 - INTRO TO CLOUD COMPUTING (3)
          - CS581 - MODELING & SIMULATION I (3)
          - CS582 - MODELING & SIMULATION II (3)

Grand Total Credits: **15**

## Computer Science (MSSE) (Fully Online)

### Program Description

The MSSE - Computer Science Track provides a solid background in software engineering principles and practice as applied to large and complex systems. The curriculum also allows students to focus in depth in specialized areas of interest to many software engineers: Big Data and Data Mining, Project Management, Parallel Programming, Embedded Systems, and Advanced Cybersecurity. Graduates of this program are prepared to be lead software engineers/software architects and work in jobs such as quality assurance, or project management, software safety, software data analysis. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

## **Delivery Method**

Fully Online

## **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

### CS Breadth Requirements

- Complete all of the following
  - Applicants to graduate programs in Computer Science must satisfy the following breadth requirements before admission to the program.
  - The breadth requirements can be satisfied in one of the following ways: Completion of the course at UAH with a grade of B or better; Completion of an equivalent course at another institution with a grade of B or better; Testing out of the course, where permitted by departmental policy
- 14 hours from:
  - MA171 - CALCULUS I (4)
  - MA172 - CALCULUS II (4)
  - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - MA385 - INTRO TO PROBABILITY & STATIST (3)
- Computer Science
  - 24 hours from:
    - CS121 - COMPUTER SCIENCE I (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS490 - INTRO TO OPERATING SYSTEMS (3)

## **Major Requirements**

## Core Requirements

21 Total Credits

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- Complete all of the following
  - Complete
    - CS617 - DES & ANALY OF ALGORITHM (3)
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS656 - SOFTWARE TESTING (3)
  - Earned at least 1 of the following:
    - CS613 - COMPUTER ARCHITECTURES (3)
    - CS690 - ADVANCED OPERATING SYSTEMS (3)
    - CPE536 - INTERNALS OF MODERN OPER SYS (3)
    - CPE631 - ADV COMP SYSTEMS ARCHITECTURE (3)
  - Earned at least 1 of the following:
    - CS585 - INTRO CYBERSECURITY ENGR (3)
    - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
- Concentration Areas: Choose two courses within any one concentration
  - Complete 1 of the following
    - Big Data and Data Mining
      - Earned at least 2 of the following:
        - CS530 - SURVEY ARTIFICIAL INTELLIGENCE (3)
        - CS554 - INTRO TO CLOUD COMPUTING (3)
        - CS588 - INTRO TO BIG DATA COMPUTING (3)
        - CS640 - MACHINE LEARNING (3)
        - CS641 - DATA MINING (3)
    - Project Management
      - Complete all of the following
        - Complete
          - ISE690 - STATISTICAL METHODS FOR ENGR (3)
        - Earned at least 1 of the following:
          - EM660 - ENGR MGMT THEORY (3)
          - MGT601 - TECH & INNOVATION MGMT (3)
          - MKT604 - NEW PRODUCT DEVELOPMENT (3)
    - Parallel Programming
      - Earned at least 2 of the following:
        - CPE512 - INTRO TO PARALLEL PROGRAMMING (3)
        - CPE612 - PARALLEL ALGORITHMS (3)
        - CPE613 - GEN PURPOSE GPU COMPUTING (3)
    - Embedded Systems
      - Earned at least 2 of the following:
        - Course Not Found
        - CPE523 - HARDWARE/SOFTWARE CO-DESIGN (3)
        - CPE621 - ADVANCED EMBEDDED SYSTEMS (3)
    - Advanced Cybersecurity
      - Complete 1 of the following
        - Earned at least 2 of the following:
          - CS580 - MOBILE DIGITAL FORENSICS (3)
          - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
          - CS685 - APPLIED CRYPTOGRAPHY (3)
        - Earned at least 2 of the following:
          - CS580 - MOBILE DIGITAL FORENSICS (3)
          - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
          - CPE645 - APPLIED CRYPTOGRAPHY (3)

## Plan Options

9 Total Credits

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- Complete 1 of the following
  - Plan I: Thesis
    - Complete all of the following
      - 6 hours from:
        - CS699 - MASTER'S THESIS (0 - 6)
      - Write and defend a Master's thesis.
      - Thesis students substitute the two CS 699 courses for the Capstone Course and one elective. Total hours required is 30 hours.
      - A student must present their thesis and pass an oral examination based on the thesis and related coursework. Plan I students must register for CS 699 each semester that they receive supervision from their advisor.
      - 3 hours from any CS or CPE 500 - 700 level course(s)
  - Plan II: Non-Thesis
    - Complete all of the following
      - Complete
        - CPE657 - SOFTWARE STUDIO (3)
      - 6 hours from any CS or CPE 500 - 700 level course(s)

Grand Total Credits: **30**

## **Computer Science (PhD)**

### **Program Description**

The PhD in Computer Science prepares students to do independent research resulting in advancements to the state of the art in computing. Students in the program examine the theory, design, development, and applications of computer systems and computer software. They can pursue research in several areas including: cybersecurity, machine learning and artificial intelligence, cloud computing, database, data science, computer graphics, computer theory, human computer interfaces, and software engineering. Students graduating from this program have skills appropriate for advanced positions in universities, research institutions, government agencies, and industry. For further information, please refer to the department web site at

<https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

### **Number of Credit Hours**

72

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

### CS Breadth Requirements

- Complete all of the following
  - Applicants to graduate programs in Computer Science must satisfy the following breadth requirements before admission to the program.
  - The breadth requirements can be satisfied in one of the following ways: Completion of the course at UAH with a grade of B or better; Completion of an equivalent course at another institution with a grade of B or better; Testing out of the course, where permitted by departmental policy
- 14 hours from:
  - Mathematics
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - Computer Science
    - CS121 - COMPUTER SCIENCE I (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS490 - INTRO TO OPERATING SYSTEMS (3)

## **Major Requirements**

Requirements

54 Total Credits

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- Complete all of the following
  - 18 hours from:
    - CS524 - PRINCIPLES PROGRAMMING LANG (3)
    - CS603 - FORMAL LANG/AUTOMAT THRY (3)
    - CS613 - COMPUTER ARCHITECTURES (3)

- CS617 - DES & ANALY OF ALGORITHM (3)
- CS650 - SOFT'W ENGINEERING PROC (3)
- CS690 - ADVANCED OPERATING SYSTEMS (3)
- 6 hours from any CS 700 - level course(s)
- 21 hours from any CS 500 - 700 level course(s)
- 9 hours from any MA 500 - 700 level course(s)

#### Dissertation

18 Total Credits

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- Complete all of the following
  - 18 hours from:
    - CS799 - DOCTORAL DISSERTATION (0 - 9)
  - CS 799 is required each semester a student is receiving direction on the doctoral dissertation.
  - A public defense of the dissertation is required. Three conference papers or one journal article related to the dissertation work must be published or accepted prior to scheduling the dissertation defense.

#### Additional Requirements

0 Total Credits

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- Complete all of the following
  - Preliminary Examination
    - Complete all of the following
      - Ph.D. students will be required to take a preliminary examination, consisting of (1) a written test covering fundamental concepts in Computer Science and (2) an evaluation by the graduate faculty of the student's overall academic potential.
      - The examination must be taken within a year after admission to the Ph.D. program, or at the earliest opportunity upon completion of the core coursework. Successful completion of the examination will provide evidence of the student's ability to continue in pursuit of the Ph.D. degree. The examination can be taken no more than twice.
  - Admission to Candidacy
    - To be admitted to candidacy for the Ph.D. degree, students must first pass the qualifying examination. The qualifying examination can cover any aspect of the student's program and is taken after completion of the student's coursework and upon recommendation of the student's supervisory committee. It is designed to test students' fitness for pursuing research projects in their chosen areas and to test their general knowledge of computer science. As part of the qualifying examination, each student will present a research proposal to the supervisory committee.
  - Residency Requirements
    - According to graduate school policy, residence may be established through either (i) being enrolled as a full-time student (at least nine graduate credit hours) either for one continuous academic year, or for Spring and Fall semesters in the same calendar year, or (ii) being enrolled in at least six hours of graduate course work in at least three of four consecutive semesters.
  - Grade Requirements
    - A grade of B or better must be earned in each of the core courses. No grade lower than C can be counted toward a Ph.D. Degree.
  - Courses Outside the Department
    - Complete all of the following
      - The following non-CS courses may be included in a CS Ph.D. program of study: any graduate level mathematics course, any graduate level computer engineering course, and ISE 526, ISE 690, and ISE 790. Those three ISE courses may be counted toward the Ph.D. mathematics requirement.
      - All non-CS courses must be approved by the Ph.D. advisor, and normally only three courses outside the Computer Science department may be included. Courses other than those listed above may not be included unless part of a cohesive area of study approved in advance by the Ph.D. advisor and the dissertation committee.
  - Other Requirements for the PhD Degree
    - Complete all of the following
      - The program must be completed within five years after admission to candidacy.
      - The Qualifying Examination may be taken no more than twice.



- All Ph.D. committees must have at least one committee member from a UAH department outside the Computer Science department. Normally this committee member comes from a department associated with a minor. Since a mathematics minor is required of all CS Ph.D. students, normally this committee member will be associated with the mathematics minor.

Grand Total Credits: **72**

## **Cybersecurity (Graduate Certificate)**

### **Number of Credit Hours**

15

### **Major Requirements**

- Complete all of the following
  - Core Requirements
    - Complete all of the following
      - 3 hours from:
        - CS585 - INTRO CYBERSECURITY ENGR (3)
        - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
      - 3 hours from:
        - CS670 - WIRELESS SENSOR NETWORKS (3)
        - CPE646 - WIRELESS SENSOR NETWORKS (3)
      - 3 hours from:
        - CS685 - APPLIED CRYPTOGRAPHY (3)
        - CPE645 - APPLIED CRYPTOGRAPHY (3)
    - Computer Engineering Electives
      - 3 hours from:
        - CPE555 - SECURE SOFTWARE DEV (3)
        - CPE557 - SOFTWARE REVERSE ENGR (3)
        - CPE559 - SYSTEMS SECURITY (3)
        - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
      - Computer Science Electives
        - 3 hours from:
          - CS565 - NETWORK SECURITY (3)
          - CS580 - MOBILE DIGITAL FORENSICS (3)
          - CS588 - INTRO TO BIG DATA COMPUTING (3)
          - CS640 - MACHINE LEARNING (3)
          - CS641 - DATA MINING (3)
          - CS681 - MALWARE ANALYSIS (3)

Grand Total Credits: **15**

## **Cybersecurity (MS)**

### **Program Description**

The MS in Cybersecurity - Computer Science Track prepares students for advanced work in the cybersecurity workforce, including advanced work in jobs such as Digital Forensic examiner, Security Engineer, IT auditor. Graduates of this program are able to identify weaknesses in computer and software systems and create cost-effective solutions to prevent security breaches. They understand advanced networks and security and will have a strong background in applied cryptography. Some students may work in reverse engineering or digital forensics or malware analysis or SCADA system security, among others. For further information, please refer to the department web site at

<https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

## **Number of Credit Hours**

30

## **Degree Requirements**

Degree Requirements

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- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

CS Breadth Requirements

- Complete all of the following
  - Applicants to graduate programs in Computer Science must satisfy the following breadth requirements before admission to the program.
  - The breadth requirements can be satisfied in one of the following ways: Completion of the course at UAH with a grade of B or better; Completion of an equivalent course at another institution with a grade of B or better; Testing out of the course, where permitted by departmental policy
- Mathematics
  - 14 hours from:
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
- Computer Science
  - 24 hours from:
    - CS121 - COMPUTER SCIENCE I (3)
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
    - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
    - CS490 - INTRO TO OPERATING SYSTEMS (3)

## **Major Requirements**

### Cybersecurity Core Courses

9 Total Credits

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- Complete all of the following
  - 6 hours from:
    - IS550 - CYBERSECURITY MANAGEMENT (3)
    - CS580 - MOBILE DIGITAL FORENSICS (3)
  - Capstone
  - Complete all of the following
    - 3 hours from:
      - CS692 - CYBERSECURITY CAPSTONE (3)
    - Should be taken toward the end of the student's program. Students must earn a grade of B or better in the capstone course.

### Computer Science Track Required Courses

15 Total Credits

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- 15 hours from:
  - CPE549 - INTRO TO CYBERSECURITY ENGINRG (3)
  - CS585 - INTRO CYBERSECURITY ENGR (3)
  - CS565 - NETWORK SECURITY (3)
  - CS670 - WIRELESS SENSOR NETWORKS (3)
  - CS685 - APPLIED CRYPTOGRAPHY (3)

### Electives

6 Total Credits

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- Complete all of the following
  - 6 hours from:
    - CPE647 - UBIQUITOUS COMPUTING (3)
    - CPE648 - ADVANCED COMPUTER NETWORKS (3)
    - CPE649 - ADV CYBERSECURITY ENGINEERING (3)
    - CS617 - DES & ANALY OF ALGORITHM (3)
    - CS640 - MACHINE LEARNING (3)
    - CS641 - DATA MINING (3)
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS687 - DATABASE SYSTEMS (3)
    - CS690 - ADVANCED OPERATING SYSTEMS (3)
    - CS695 - INDEPENDENT STUDY (3)
    - CS696 - SELECTED TOPICS IN CS (3)
    - CS795 - INDEPENDENT STUDY (3)
    - CS796 - ADVANCED SELECTED TOPICS (3)
  - CS 695, CS 696, CS 795, CS 796 require approval from the student's advisor and approval of the course instructor. The course topic must be cybersecurity related.

Grand Total Credits: **30**

## **Cybersecurity (Undergraduate Certificate)**

### **Number of Credit Hours**

12

### **Major Requirements**

- Complete all of the following  
Core Requirements
  - Complete all of the following
    - 3 hours from:
      - CS370 - INTRO COMPUTER NETWORKS (3)
      - CPE348 - INTRO TO COMPUTER NETWORKS (3)
    - 3 hours from:
      - CS485 - INTRO CYBERSECURITY ENGR (3)
      - CPE449 - INTRO TO CYBERSECURITY ENGINRG (3)
- Computer Engineering Electives
  - 3 hours from:
    - CPE455 - SECURE SOFTWARE DEVELOPMENT (3)
    - CPE457 - SOFTWARE REVERSE ENGINEERING (3)
    - CPE459 - SYSTEMS SECURITY (3)
- Computer Science Electives
  - 3 hours from:
    - CS465 - NETWORK SECURITY (3)
    - CS480 - MOBILE DIGITAL FORENSICS (3)
    - CS488 - INTRO TO BIG DATA COMPUTING (3)

Grand Total Credits: **12**

## **Data Science (Certificate)**

### **Program Description**

The certificate in Data Science equips students with the foundational knowledge and skills needed to analyze large quantities of structured and unstructured data using computation and mathematics. By exploring diverse data sources, students learn how to uncover insights and interpret data, which can be applied across various domains. For instance, in business, these skills enable targeted advertising to reach the most interested audience. In cybersecurity, they aid in detecting computer hackers, while in logistics, they help predict the quantities of various merchandise to be pre-stored and shipped to various warehouses. This certificate prepares students for roles such as Business Intelligence Developer, Applications Architect, and Enterprise Architect, among others.

For further information, please refer to the department web site at

<https://www.uah.edu/science/departments/computer-science/cs-undergraduate-programs>.

### **Number of Credit Hours**

12

## **Degree Requirements**

- Complete all of the following
  - Students must also complete the following courses, as they are prerequisites to the required certificate courses.
  - Complete
    - CS214 - INTRO DISCRETE STRUCTURE (3)
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
  - Earned at least 1 of the following:
    - CS121 - COMPUTER SCIENCE I (3)
    - CPE211 - INTRO COMPUTER PROG FOR ENGR (3)
  - Earned at least 1 of the following:
    - CS221 - COMP SCI II: DATA STRUCTURES (3)
    - CPE212 - FUNDAMENTALS SOFTWARE ENGRG (3)
- If CS 454 is chosen:
- Complete all of the following
  - Complete
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Earned at least 1 of the following:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
  - Earned at least 1 of the following:
    - CS307 - OBJECT ORIENT/PROG C++ (3)
    - CPE348 - INTRO TO COMPUTER NETWORKS (3)
- If CS 481 or CS 482 is chosen:
- Earned at least 1 of the following:
  - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - ISE390 - PROB & ENGR STATISTICS I (3)

## **Major Requirements**

- Complete all of the following
  - Complete
    - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
    - CS430 - SURVEY ARTIFICIAL INTELLIGENCE (3)
    - CS488 - INTRO TO BIG DATA COMPUTING (3)
  - Earned at least 1 of the following:
    - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
    - CS445 - INTRO COMPUTER GRAPHICS (3)
    - CS454 - INTRO TO CLOUD COMPUTING (3)
    - CS481 - MODELING & SIMULATION I (3)
    - CS482 - MODELING & SIMULATION II (3)
    - CS487 - DATABASE SYSTEMS (3)

Grand Total Credits: **12**

## **Data Science (Graduate Certificate)**

### **Program Description**

The graduate certificate in Data Science Certificate provides an advanced and in-depth exploration of the computational and mathematical aspects of data analysis. Students delve into sophisticated techniques to analyze large volumes of structured and unstructured data, extracting valuable insights and interpreting complex information. This certificate emphasizes the development of advanced skills in statistical modeling, machine learning, and data manipulation. Graduates of this program possess the expertise to engage in more advanced data analysis, including complex business and scientific datasets. For further information, please refer to the department web site at

<https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>.

### **Number of Credit Hours**

15

### **Major Requirements**

- Complete all of the following
  - Computational Statistics/Algorithm Design
    - Complete
      - CS588 - INTRO TO BIG DATA COMPUTING (3)
      - CS617 - DES & ANALY OF ALGORITHM (3)
    - Group A
      - Earned at least 2 of the following:
        - CS637 - DEEP LEARNING (3)
        - CS640 - MACHINE LEARNING (3)
        - CS641 - DATA MINING (3)
        - CS687 - DATABASE SYSTEMS (3)
    - Group B
      - Earned at least 1 of the following:
        - CS530 - SURVEY ARTIFICIAL INTELLIGENCE (3)
        - CS543 - INTRO TO MULTIMEDIA SYSTEMS (3)
        - CS545 - INTRO COMPUTER GRAPHICS (3)
        - CS554 - INTRO TO CLOUD COMPUTING (3)
        - CS581 - MODELING & SIMULATION I (3)
        - CS582 - MODELING & SIMULATION II (3)

Grand Total Credits: **15**

## **Earth Ecosystems (Minor)**

### **Program Description**

The minor in Earth Ecosystems Atmospheric and Earth Science provides students with an appreciation of the complex interactions between the natural environment, plant and animal organisms and the built environment. It prepares students with a major in the Biological Sciences to assess the relationship between organisms and processes in the atmosphere and earth system, including in the presence of climate change. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - AES302 - PEOPLE, PLANTS, & ENVIRONMENT (3)
    - AES312 - PRINCIPLES OF ECOLOGY (4)
  - 6 hours from:
    - AES210 - COLLAPSE OF CIVILIZATIONS (3)
    - AES303 - CLASSI & PHYSICAL CAUSES CLIM (3)
    - AES307 - ENVIRONMENTAL ARCHEOLOGY (3)
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
    - AES407 - ENV THRTS, PUB POLY, & DEC MKG (3)
    - AES408 - PYTHON FOR GIS (3)
    - AES414 - GEOSPATIAL APPLICATIONS (3)
    - AES415 - ADVANCED TOPICS IN GIS (3)

Grand Total Credits: **21**

## **Engineering Technology (BS) (Fully Online)**

### **Program Description**

The BS in Engineering Technology degree is an applied program that allows students to explore the integration of engineering principles and modern technology. Graduates will use their math, science and engineering skills to design products and systems, install and maintain products, and provide a wide range of services such as implementing designs, testing, calibrating and supervising operations. All BSET courses are offered in the evening or asynchronously online with most courses offered in a hybrid online/live format. The program is designed to work well with students transferring from community college technical programs. For further information please refer to the program website at <https://www.uah.edu/science/degree-programs/undergraduate>.

### **Delivery Method**

Fully Online

### **Number of Credit Hours**

120

## **Degree Requirements**

### Degree Requirements

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- BS Degree Requirements (COS)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

## **General Education (Charger Foundations) Requirements**

### Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

### Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

### Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

### Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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#### Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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#### Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV

- Complete all of the following
  - 3 hours from:
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    - Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
  - 9 hours from:
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences - World
      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)
    - keyboard\_arrow\_up*
    - Area IV: History, Social and Behavioral Sciences -US
      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - keyboard\_arrow\_up*
    - Area IV - History, Social and Behavioral Sciences - SBS
      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional Requirements)

19 Total Credits

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- Complete all of the following
  - Earn a minimum grade of C- in at least 1 of the following:
    - ISE390 - PROB & ENGR STATISTICS I (3)
    - MA181 - INTRODUCTION TO STATISTICS (3)
    - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
    - MSC287 - BUSINESS STATISTICS I (3)
    - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
    - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
    - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - Earn a minimum grade of C- in at least 1 of the following:
    - EGR101 - INTRO COMPUTING ENGINEERS (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - Physics I Sequence
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - PH101 - GENERAL PHYSICS I (4)
      - PH101L - GENERAL PHYSICS I LAB
    - Earn a minimum grade of C- in all of the following:
      - PH111 - GEN PHYSICS W/CALCULUS I (3)
      - PH114 - GENERAL PHYSICS LAB I (1)
  - Physics II Sequence
  - Complete 1 of the following
    - Earn a minimum grade of C- in all of the following:
      - PH102 - GENERAL PHYSICS II (4)
      - PH102L - GENERAL PHYSICS LAB II
    - Earn a minimum grade of C- in all of the following:
      - PH112 - GEN PHYSICS W/CALC II (3)
      - PH115 - GENERAL PHYSICS LAB II (1)
  - Earned at least 1 credits from FYE
  - Earn a minimum grade of C- in at least 1 of the following:
    - MA171 - CALCULUS I (4)
    - MA171S - CALCULUS I S-SECTION (4)

Grand Total Credits: **19**

## **Major Requirements**

### Major Requirements

40 Total Credits

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- 40 hours from:
  - ET101 - ENGINEERING TECH FNDNS I (3)
  - ET302 - ENGINEERING TECH FNDNS II (3)
  - ET305 - ENGINEERING COMMUNICATION (3)
  - ET310 - COMPUTER-AIDED DESIGN (3)
  - ET314 - QUALITY CONTROL TECHNIQUES (3)
  - ET334 - PRINCIPLES OF STATICS (3)
  - ET335 - STRENGTH OF MATERIALS (3)
  - ET336 - PRINCIPLES OF DYNAMICS (3)
  - ET350 - ELECTRICAL CIRCUITS & SYSTEMS (3)
  - ET425 - FUNDAMENTALS OF MANUFACTURING (3)
  - ET433 - INSTRUMENTATION & MEASUREMENT (3)
  - ET434 - INSTRUMENT & MEASUREMENT LAB (1)
  - ET498 - PROJECT MANAGEMENT FOR ET (3)
  - ET499 - CAPSTONE FOR ENGINEERING TECH (3)

### General Electives

20 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 20
  - Up to 32 hours of technical credit may be accepted as electives. Elective hours vary by program, please see advisor.

Grand Total Credits: **60**

## **4-Year Plan**

### Year 1

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### Fall

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- Complete all of the following
  - 3 hours from:
    - MA112 - PRECALCULUS ALGEBRA (3)
    - MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - Course Not Found
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - HON 101 in the Fall OR FYE 101S in the Spring
  - 3 Hours Social & Behavioral Science
  - 3 Hours Fine Art
  - 3 Hours History

### Spring

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- Complete all of the following
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)
  - 3 hours from:

- MA113 - PRECALCULUS TRIGONOMETRY (3)
- 3 hours from:
  - MA181 - INTRODUCTION TO STATISTICS (3)
  - MA281 - ELEMENTS OF STATISTICAL ANALYSIS (3)
  - PY300 - PSYCHOLOGICAL STATISTICS (3)
  - SOC303 - STATISTICS/SOCIAL SCIENCES (3)
  - MSC287 - BUSINESS STATISTICS I (3)
  - MA385 - INTRO TO PROBABILITY & STATISTICS (3)
  - ISE390 - PROB & ENGR STATISTICS I (3)
- 3 hours from:
  - EGR101 - INTRO COMPUTING ENGINEERS (3)
  - CS104 - INTRO TO CS USING PYTHON (3)
- 3 Hours History
- HON 101 in the Fall OR FYE 101S in the Spring

Year 2

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Fall

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- 14 hours from:
  - MA171 - CALCULUS I (4)
  - PH101 - GENERAL PHYSICS I (4)
  - PH101L - GENERAL PHYSICS I LAB
  - ET101 - ENGINEERING TECH FUNDNS I (3)
  - ET302 - ENGINEERING TECH FUNDNS II (3)

Spring

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- Complete all of the following
  - 10 hours from:
    - PH102 - GENERAL PHYSICS II (4)
    - PH102L - GENERAL PHYSICS LAB II
    - ET305 - ENGINEERING COMMUNICATION (3)
    - ET314 - QUALITY CONTROL TECHNIQUES (3)
  - 3 Hours Social & Behavioral Science
  - 3 Hours General Elective

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - ET310 - COMPUTER-AIDED DESIGN (3)
    - ET334 - PRINCIPLES OF STATICS (3)
    - ET350 - ELECTRICAL CIRCUITS & SYSTEMS (3)
  - 3 Hours Literature
  - 3 Hours Non-Literature Humanity

Spring

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- Complete all of the following
  - 6 hours from:

- ET335 - STRENGTH OF MATERIALS (3)
- ET336 - PRINCIPLES OF DYNAMICS (3)
- 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
- 6 Hours General Electives

Year 4

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Fall

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- Complete all of the following
  - 10 hours from:
    - ET425 - FUNDAMENTALS OF MANUFACTURING (3)
    - ET498 - PROJECT MANAGEMENT FOR ET (3)
  - 8 Hours General Electives

Spring

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- Complete all of the following
  - 7 hours from:
    - ET499 - CAPSTONE FOR ENGINEERING TECH (3)
    - ET433 - INSTRUMENTATION & MEASUREMENT (3)
    - ET434 - INSTRUMENT & MEASUREMENT LAB (1)
  - 8 Hours General Electives

## Engineering Technology (Minor)

### Program Description

The minor in Engineering Technology prepares students to better communicate and collaborate with Engineers with hands-on, applied instruction. The Engineering Technology minor is versatile, and electives can be chosen to emphasize desired specializations. Areas covered by this program include the engineering design process, computer aided design, quality control and basic electrical circuits. Electives can be chosen to obtain a deeper understanding of mechanics, instrumentation, manufacturing processes and technical writing for industry. For further information, please refer to the department web site at UAH - College of Science.

### Number of Credit Hours

21

### Minor Requirements

Minor Requirements

21 Total Credits

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- Complete all of the following
  - Complete
    - ET101 - ENGINEERING TECH FNDNS I (3)
    - ET302 - ENGINEERING TECH FNDNS II (3)
    - ET310 - COMPUTER-AIDED DESIGN (3)
    - ET314 - QUALITY CONTROL TECHNIQUES (3)
    - ET350 - ELECTRICAL CIRCUITS & SYSTEMS (3)
  - 6 hours from any ET 300 - 400 level course(s)

Grand Total Credits: **21**



## Entertainment Computing (Minor)

### Program Description

The minor in Entertainment Computing examines methodologies and tools to support entertainment related applications. Students from this program are prepared to work in various aspects of the video game industry, and the skills students acquire from this program also apply to jobs in serious games, virtual reality, and modeling and simulation. For further information, please refer to the department web site at <https://www.uah.edu/science/degree-programs/minors>.

### Number of Credit Hours

24

### Minor Requirements

Prerequisites

0 Total Credits

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- - MA120 - MATH PROFESSIONAL APPLICATIONS (3)
  - MA171 - CALCULUS I (4)
  - MA172 - CALCULUS II (4)

Minor Requirements

24 Total Credits

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- Complete all of the following
  - Computer Science Requirements
    - Complete all of the following
      - 12 hours from:
        - CS121 - COMPUTER SCIENCE I (3)
        - CS143 - INTRO TECH MULTIMEDIA & GAMING (3)
        - CS221 - COMP SCI II: DATA STRUCTURES (3)
      - 3 hours from:
        - CS330 - ARTFCL INTEL & GAME DEV (3)
        - CS347 - INTRO VIDEO GAME DESGN & PROGM (3)
      - 3 hours from:
        - CS443 - INTRO TO MULTIMEDIA SYSTEMS (3)
        - CS445 - INTRO COMPUTER GRAPHICS (3)

Dramatic Media Elements

- 3 hours from:
  - ARS230 - GRAPHIC DESIGN: INTRODUCTION (3)
  - ARS250 - PHOTOGRAPHY: INTRODUCTION (3)
  - ARS321 - ANIMATION: ORGANIC MODELING (3)
  - ARS322 - ANIMATION: 3D ANIMATION (3)
  - ARS324 - ANIMATION: TECHNICAL ARTS (3)
  - ARS334 - GRAPH DES: WEB USER EXPER I (3)
  - ARS350 - PHOTO: DIGITAL I (3)
  - ARS355 - PHOTO: DOCUMENTARY I (3)
  - Course Not Found
  - MU106 - INTRO TO MUSIC TECHNOLOGY (1)
  - MU306 - MUSIC TECHNOLOGY IV (3)
  - TH225 - ELEMENTS OF THEATRE PRODUCTION (3)
  - CM340 - SPEC TOPICS IN COMM ARTS (3)
  - EH410 - FICTION WRITING (3)

Math Requirement

- 3 hours from:
  - MA244 - INTRO TO LINEAR ALGEBRA (3)

Grand Total Credits: **24**

## **Geographical Information Systems (Minor)**

### **Program Description**

The minor in Geographic Information Systems (GIS) provides students with the knowledge and skills to create maps and to analyze and manage data in a geospatial framework. GIS will help students understand patterns, relationships, and the geographic context of data from a wide variety of fields, including in sciences, engineering, business, education and the social sciences. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
    - AES414 - GEOSPATIAL APPLICATIONS (3)
  - 4 hours from:
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES301 - INTRO TO EARTH & ATMOSPHERIC PHYS (3)
    - AES303 - CLASSICAL & PHYSICAL CAUSES CLIMATE (3)
    - AES305 - HYDROLOGY (3)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES402 - SCIENCE & SOCIETY ASPECTS OF NATURAL DISASTERS (3)
    - AES408 - PYTHON FOR GIS (3)
    - AES409 - SCIENCE PROGRAMMING FOR EARTH & ATMOSPHERE (3)
    - AES415 - ADVANCED TOPICS IN GIS (3)

Grand Total Credits: **21**

## **Geographical Information Systems & Remote Sensing (Certificate)**

### **Program Description**

The certificate in GIS & Remote Sensing introduces students to Geographic Information Systems (GIS) and prepares them for careers directly in the GIS field, geospatial intelligence with remote sensing or gives them GIS experience as a supplemental technical skillset for application across many disciplines and career fields. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Number of Credit Hours**

15

### **Major Requirements**

Requirements

15 Total Credits

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- 15 hours from:
  - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
  - AES370 - INTRODUCTION TO REMOTE SENSING (3)
  - AES408 - PYTHON FOR GIS (3)
  - AES414 - GEOSPATIAL APPLICATIONS (3)
  - AES415 - ADVANCED TOPICS IN GIS (3)

Grand Total Credits: **15**

## **Geographical Information Systems & Remote Sensing (Graduate Certificate)**

### **Program Description**

The graduate certificate in GIS & Remote Sensing provides an advanced background in Geographic Information Systems (GIS) and prepares students for careers directly in the GIS field, geospatial intelligence with remote sensing, or gives them GIS experience as a supplemental technical skillset with application across many disciplines and career fields. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-graduate-programs>.

### **Number of Credit Hours**

12

### **Major Requirements**

Required Courses

12 Total Credits

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- 12 hours from:
  - AES508 - PYTHON FOR ID ESS APPLICATIONS (3)
  - AES514 - GEOSPATIAL APPLICATIONS (3)
  - AES515 - ADVANCED TOPICS IN GIS (3)
  - AES676 - REMOTE SENSING OF ENVIRONMENT (3)

Grand Total Credits: **12**

## **Individualized Studies (BS)**

## **Program Description**

The BS in Individualized Studies allows a student to create a specialized degree program appropriate for their individual educational career goals that does not otherwise fit into the currently structured degree program. Examples of this include students who want to combine aspects of two different programs or who wish to earn a degree for which there is no formal program. For more information, please refer to the department web site at <https://www.uah.edu/science/degree-programs/individualized-studies-bs>

## **Number of Credit Hours**

120

## **Degree Requirements**

Degree Requirements

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- Complete all of the following
  - BS Degree Requirements (COS)
    - Complete all of the following
      - Must have a 2.0 GPA in major, minor, and overall
      - 30% of total degree requirements must be taken at 300 level or higher
      - No more than 4 credit hours of HPE may count in degree requirements
      - 12 of the last 18 credit hours must be taken at UAH
      - 25% of the major, minor, and overall coursework must be taken at UAH
      - No more than 50% of total degree requirement credit hours can come from a two-year school
      - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.
    - Students may not pursue the Bachelor of Science in Individualized Studies degree as a second major, second degree, or second baccalaureate.
    - Although not required, a student may choose to pursue one minor within this degree, however there can be no overlap between courses in the minor and the 36 credit hours courses required for the major.

## **General Education (Charger Foundations) Requirements**

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
      - PHL102 - INTRO TO ETHICS (3)
      - PHL103 - INTRODUCTION TO LOGIC (3)
      - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
      - TH122 - THEATRE APPRECIATION (3)
      - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
      - WLC204 - INTERNATIONAL CINEMA (3)
    - keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - WLC 101
      - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
      - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
      - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
      - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
      - WLC101MS - INTRO TO MEDICAL SPANISH (3)
      - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
      - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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Area II: Humanities and Fine Arts - WLC 102
      - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
      - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
      - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
      - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
      - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
      - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
      - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
    - keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)

- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Charger Foundations - Area III
  - Complete all of the following
    - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)

- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

#### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

1 Total Credits

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- 1 hours from:
  - FYE101S - CHARGER SUCCESS - SCIENCE (1)

Grand Total Credits: **1**



## **Major Requirements**

Major Requirements

36 Total Credits

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- 36 hours from the following:  
College of Science courses.

General Electives

42 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 42
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **78**

## **Materials Science (MS)**

### **Program Description**

The MS in Materials Science - Science Track provides an interdisciplinary approach to the education and enhancement of student skill sets so that they can participate in meaningful research that supports the research, education, policy, and manufacturing sectors. Students may receive their masters as a precursor to their doctoral program. Although a non-thesis option is available, students are encouraged to pursue the thesis option as it enhances the student's technical skill set, exposes them to new research opportunities and makes them more attractive to employers. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/materials-science>.

### **Number of Credit Hours**

30

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## **Major Requirements**

### Core Requirements

24 Total Credits

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- Complete all of the following
  - 6 hours from:
    - MTS601 - NATURE OF MATERIALS (3)
    - MTS602 - PROPERTIES OF MATERIALS (3)
  - ■ MTS780 - MATERIALS SCIENCE SEMINAR (1)
  - Students should also register for MTS 780 (one credit hour) during every semester they are in residence at UAH, although these credits do not apply toward the 30 credit hours required for the M.S. degree.
  - Subcategory Electives
  - Complete all of the following
    - Structure and Properties of Materials
      - 6 hours from:
        - CH645 - POLYMER PHYSICAL CHEMISTRY (3)
        - MAE595 - SELECTED TOPICS MECH & AERO EG (1 - 6)
        - MAE672 - ELASTICITY (3)
        - MAE673 - PLASTICITY (3)
        - MTS660 - INTRO SOLID ST PHY I (3)
        - MTS661 - INTRO SOLID ST PHY II (3)
        - PH661 - DATA ANAL/STAT METH PH/ASTROPH (3)
    - Characterization and Testing
      - 6 hours from:
        - CH521 - CHEMICAL INSTRUMENTATION (3)
        - CHE594 - APPLIED MATERIALS PROCESSING (3)
        - CHE595 - ADV THERMODYNAMICS (3)
        - MAE577 - EXP TECH SOLID MECHANICS (3)
        - Course Not Found

- MAE778 - FRACTURE MECHANICS (3)

Thermodynamics and Processing

- 6 hours from:
  - CH640 - ADV CHEMICAL THERMODYNAMICS (3)
  - CH641 - STATIST THERMODYNAMICS (3)
  - CH642 - ADV CHEMICAL DYNAMICS (3)
  - CHE541 - CHEM KINETICS & REACTOR DESIGN (3)
  - CHE641 - ADV THERMODYNAMICS (3)
  - CHE646 - THERMODYNAMICS OF MATRLS (3)
  - CHE648 - TRANSPORT PHENOMENA I (3)
  - CHE649 - TRANSPORT PHENOMENA II (3)
  - CHE658 - CATALYSIS/REACTOR DESIGN (3)
  - MAE641 - ADV THERMODYNAMICS (3)
  - MAE746 - CONVECTIVE HEAT TRANSFER (3)
  - PH621 - STAT MECH KINETIC THRY I (3)

Thesis/Non-Thesis

6 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 6 hours from:
        - MTS699 - MASTER'S THESIS (0 - 9)
      - A Program of Study (POS) must be planned in consultation with a member of the materials science faculty serving as an advisor. A list of courses within the approved subcategories can be obtained from the Program Director.
      - After a student following Plan I selects a thesis topic and research advisor, a supervisory committee will be formed. This committee should consist of three members of the materials science faculty, including the research advisor as Committee Chair (if the research advisor is a full member of the UAH Graduate Faculty). A student must complete a written thesis and successfully defend it by an oral presentation before the supervisory committee.
  - Non-Thesis Seeking Students
    - Complete all of the following
      - 3 hours from any 500 - 700 level course(s)
      - 3 hours from any 600 - 700 level course(s)
      - A POS must be planned in consultation with a member of the materials science faculty serving as an advisor. A list of courses within the approved subcategories can be obtained from the Program Director.

Grand Total Credits: **30**

## Materials Science (PhD)

### Program Description

The PhD in Materials Science - Science track is part of a program offered jointly by the three University of Alabama system campuses. In this program, faculty members from various departments on each campus constitute the materials science faculty. Students pursue topics related to the science of materials, placing special emphasis on materials processing, the production of new materials, and on the application of materials to the needs of technology. For further information please refer to the department web site at <https://www.uah.edu/science/departments/materials-science>.

### Number of Credit Hours

66

### Degree Requirements

Degree Requirements

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- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

### Major Requirements

Course Requirements

48 Total Credits

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- 48 hours from any CH, CHE, EE, MAE, MTS, or PH 500 - 700 level course(s)

Dissertation

18 Total Credits

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- 18 hours from:
  - MTS799 - DOCTORAL DISSERTATION (0 - 9)

Grand Total Credits: **66**

## Mathematical Sciences (BS)

### Program Description

The BS in Mathematical Sciences is designed to prepare students for careers in government, industry, teaching in secondary education, and/or for graduate study in mathematics. Students will develop time management, critical thinking and problem-solving skills, while gaining knowledge in mathematics. For further information, please refer to the department Web site at: <https://www.uah.edu/science/departments/math/ma-undergraduate-programs>.

### Number of Credit Hours

120

### Degree Requirements

Charger Foundations

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- BS Degree Requirements (COS)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

### General Education (Charger Foundations) Requirements

Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:
        - Any General Elective

Area II: Humanities and Fine Arts

12 Total Credits

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- Complete all of the following
  - Charger Foundations - Area II

- Complete all of the following
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Fine Arts

    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARS160 - DRAWING: FOUNDATIONS (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - TH122 - THEATRE APPRECIATION (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Literature

    - EH207 - READINGS LITERATURE/CULTURE I (3)
    - EH208 - READINGS LITERATURE/CULTURE 2 (3)
    - EH241 - LITERATURE WITHOUT BORDERS (3)
    - EH242 - MYTHOLOGY (3)
    - EH243 - PROTEST LITERATURE (3)
    - EH244 - HEROES &/OR MONSTERS (3)
    - EH245 - LOVE &/OR ROMANCE (3)
    - EH246 - SPECULATIVE REALITIES (3)
  - 3 hours from:
 

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Area II: Humanities and Fine Arts - Non-Literature

    - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
    - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
    - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
    - ARH103 - ARH SUR: WORLD ART (3)
    - ARH120 - ARH SUR: SPECIAL TOPICS (3)
    - CM113 - PUBLIC SPEAKING (3)
    - FMA123 - INTRO TO FILM STUDIES (3)
    - MU100 - INTRO TO MUSIC LITERATURE (3)
    - PHL101 - INTRODUCTION TO PHILOSOPHY (3)
    - PHL102 - INTRO TO ETHICS (3)
    - PHL103 - INTRODUCTION TO LOGIC (3)
    - PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
    - TH122 - THEATRE APPRECIATION (3)
    - WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
    - WLC204 - INTERNATIONAL CINEMA (3)
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Area II: Humanities and Fine Arts - WLC 101

    - WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
    - WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
    - WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
    - WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
    - WLC101MS - INTRO TO MEDICAL SPANISH (3)
    - WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
    - WLC101S - INTRO FOREIGN LANG I: SPANISH (3)
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Area II: Humanities and Fine Arts - WLC 102

    - WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
    - WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
    - WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
    - WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
    - WLC102MS - INTRO TO MEDICAL SPANISH II (3)
    - WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
    - WLC102S - INTRO FOREIGN LANG II:SPANISH (3)
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Area II: Humanities and Fine Arts - WLC 201

    - WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
    - WLC201F - INTERM FOREIGN LANG:FRENCH (3)
    - WLC201G - INTERM FOREIGN LANG:GERMAN (3)

- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)

- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- Mathematical Sciences students must choose CM 113 to satisfy Area II: Humanities and Fine Arts in Charger Foundations.

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following

- 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)



- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)
- Mathematical Sciences students must choose PH 111, PH 114, PH 112, and PH 115 to satisfy Area III: Mathematics and Sciences in Charger Foundations.

#### Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV
  - Complete all of the following
    - 3 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)
    - 9 hours from:
 

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Area IV: History, Social and Behavioral Sciences - World

      - HY103 - WORLD HISTORY TO 1500 (3)
      - HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

      - HY221 - UNITED STATES TO 1877 (3)
      - HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

      - AES105 - WORLD REGIONAL GEOGRAPHY (3)
      - AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
      - GS200 - GLOBAL SYSTEMS AND CULTURES (3)
      - PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
      - PSC102 - INTRO TO COMPARATIVE POLITICS (3)
      - PSC260 - INTRO INTERNTL RELATIONS (3)
      - PY101 - GENERAL PSYCHOLOGY I (3)
      - PY201 - LIFE-SPAN DEVELOPMENT (3)
      - SOC100 - INTRO TO SOCIOLOGY (3)
      - SOC103 - INTRO TO CRIMINOLOGY (3)
      - ECN142 - PRINC OF MACROECONOMICS (3)
      - ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

## **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

11 Total Credits

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- Complete all of the following
  - 1 hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
  - Computer Programming
  - Complete all of the following
    - 3 hours from:
      - CS102 - INTRO TO C PROGRAMMING (3)
      - CS103 - INTRO PROGRAMMING USING JAVA (3)
      - CS104 - INTRO TO CS USING PYTHON (3)
    - 3 hours from:
      - CS121 - COMPUTER SCIENCE I (3)
  - Additional Lab Science
  - Complete 1 of the following
    - 4 hours from:
      - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
      - AST109 - INTRODUCTION TO SPACE SCIENCE (1)
    - 4 hours from:
      - AES104 - WEATHER & CLIMATE CHANGE (4)
      - AES104L - LABORATORY
    - 4 hours from:
      - AST106 - EXPLORING THE COSMOS I (4)
      - AST106L - EXPLORING THE COSMOS I LAB
    - 4 hours from:
      - CH101 - INTRO TO CHEMISTRY (3)
      - CH105 - INTRO CHEMISTRY LAB (1)
    - 4 hours from:
      - CH121 - GENERAL CHEMISTRY I (3)
      - CH125 - GENERAL CHEMISTRY LAB I (1)
    - 4 hours from:
      - BYS119 - PRINCIPLES OF BIOLOGY (3)
      - BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
    - 4 hours from:
      - BYS120 - ORGANISMAL BIOLOGY (3)
      - BYS122 - ORGANISMAL BIOLOGY LAB (1)
    - 4 hours from:
      - PH113 - GEN PHYSICS W/CALC III (3)
      - PH116 - GENERAL PHYSICS LAB III (1)

Grand Total Credits: **11**

## **Major Requirements**

Major Requirements

46 - 48 Total Credits

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- Complete all of the following
  - Calculus I
    - Complete 1 of the following
      - 6 hours from:
        - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
        - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
      - 4 hours from:
        - MA171 - CALCULUS I (4)
        - MA171S - CALCULUS I S-SECTION (4)
    - 33 hours from:
      - MA172 - CALCULUS II (4)
      - MA201 - CALCULUS III (4)
      - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
      - MA244 - INTRO TO LINEAR ALGEBRA (3)
      - MA330 - FOUNDATIONS OF MATH (3)
      - MA385 - INTRO TO PROBABILITY & STATIST (3)
      - MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
      - MA452 - INTRO TO REAL ANALYSIS (3)
      - MA465 - INTRO TO MATH MODELING (3)
    - 9 hours from any MA 300 - 400 level course(s)
    - Based on Math Placement, prerequisite (MA 112 and/or MA 113) Mathematics courses may be required.

General Electives

26 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 26
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **72 - 74**

## **4-Year Plan**

Year 1

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- 

Fall

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- Complete all of the following
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)
  - 4 hours from:
    - MA171 - CALCULUS I (4)

- 4 Hours Lab Science

Spring

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- 11 hours from:

Year 2

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Fall

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- Complete all of the following
  - 8 hours from:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 Hours History
  - 3 Hours Fine Art

Spring

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- Complete all of the following
  - 6 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - 3 Hours History
  - 3 Hours Social and Behavioral Science
  - 3 Hours General Elective

Year 3

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Fall

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- Complete all of the following
  - 9 hours from:
    - MA330 - FOUNDATIONS OF MATH (3)
    - MA385 - INTRO TO PROBABILITY & STATIST (3)
    - CM113 - PUBLIC SPEAKING (3)
  - 3 Hours Literature
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - MA442 - ALGEBRAIC STRUCTURES W/APPLIC (3)
    - MA465 - INTRO TO MATH MODELING (3)
  - 3 Hours Humanities, 2nd Fine art or 2nd Literature
  - 3 Hours General Elective (300+ or 400+ course)
  - 4 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - MA452 - INTRO TO REAL ANALYSIS (3)
  - 3 Hours Mathematics Elective (300+ or 400+ course)
  - 3 Hours General Elective (300+ or 400+ course)
  - 3 Hours General Elective (300+ or 400+ course)
  - 3 Hours Social and Behavioral Science

Spring

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- Complete all of the following
  - 3 Hours Mathematics Elective (300+ or 400+ course)
  - 3 Hours Mathematics Elective (300+ or 400+ course)
  - 3 Hours General Elective (300+ or 400+ course)
  - 3 Hours General Elective
  - 3 Hours General Elective

## **Mathematical Sciences (BS) - JUMP: BS MA, Mathematics (MA)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Mathematics to an MA in Mathematics is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Mathematical Sciences (MA)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MA@uah.edu

### **JUMP Landing (Graduate Program)**

MA\_Math@uah.edu

## **Mathematical Sciences (BS) - JUMP: BS MA, Mathematics (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Mathematics to an MS in Mathematics is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Mathematical Sciences (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MA@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Math@uah.edu

## **Mathematical Sciences (BS) - JUMP: BS MA, Space Science (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Mathematics to an MS in Space Science is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **JUMP Completion Requirements**

Graduate School JUMP Rules

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- Graduate School JUMP Rules
  - Complete all of the following
    - Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
    - Students must maintain the minimum overall program GPA throughout until graduation.
    - All coursework for the master's degree must be completed within six years of taking your first JUMP class.
    - Students are considered undergraduate students until all requirements for undergraduate degree are met.
    - If a change is made to the initial JUMP application, a JUMP change form must be submitted for approval to your JUMP advisor.
    - Students cannot hold a GTA, GRA, or graduate scholarship or fellowship until undergraduate degree is completed.
    - Students must begin their graduate program within one year of their undergraduate graduation.
    - Within the last term of undergraduate enrollment, JUMP students must submit the online application for graduate admission. Admission to the UAH Graduate School will be granted if students have maintained the minimum requirements of their JUMP academic program.

### **Approved Master's Program**

Space Science (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_MA@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_SpaceScience@uah.edu



## Mathematical Sciences (MA)

### Program Description

The MA in Mathematical Sciences prepares college students planning a mathematics-oriented career in a high-tech environment, or a professional seeking to better understand the mathematics underlying their field. It qualifies graduates to work in fields such as actuarial science, computer science, data science, among others. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/math/ma-graduate-programs>.

### Number of Credit Hours

33

### Degree Requirements

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## Mathematical Sciences (MA) - Education (Concentration)

### Description

The MA in Mathematical Sciences with a concentration in Education leads to Class A Teaching Certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/math/ma-graduate-programs>.

### Concentration Requirements

Requirements

24 Total Credits

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- Complete all of the following
  - 3 hours from:
    - MA538 - METRIC SPACES W/APPLICA (3)
    - MA539 - MULTIDIMENSIONAL ANALYSIS (3)
  - 18 hours from:
    - MA542 - ALGEBRA (3)
    - MA544 - LINEAR ALGEBRA (3)
    - MA585 - PROBABILITY (3)
    - MA614 - NUM METHODS/LINEAR ALGEBRA (3)
    - MA633 - GEOMETRY (3)
    - ST687 - THEORY OF STATISTICS I (3)
  - 3 hours from any MA or ST 600 - 700 level course(s)
  - A final comprehensive examination is required of all candidates for a master's degree. The candidate will be examined on the coursework and thesis in Plan I and on the coursework in Plan II. In the Mathematical Sciences Department this examination is oral, except that Plan II students who have passed a joint program examination for the Ph.D. degree in applied mathematics may use that examination as their master's degree final examination.

Education Requirements

9 Total Credits

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- 9 hours from any ED 500 - 600 level course(s)

Grand Total Credits: **33**

## Mathematical Sciences (MA) - Mathematics, General (Concentration)

### Description

The MA in Mathematics with a General concentration is the path for students pursuing the degree without also pursuing a teaching credential. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/math>.

### Concentration Requirements

Core Requirements

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - MA538 - METRIC SPACES W/APPLICA (3)
    - MA539 - MULTIDIMENSIONAL ANALYSIS (3)
  - 3 hours from:
    - MA544 - LINEAR ALGEBRA (3)
  - A final comprehensive examination is required of all candidates for a master's degree. The candidate will be examined on the coursework and thesis in Plan I and on the coursework in Plan II. In the Mathematical Sciences Department this examination is oral, except that Plan II students who have passed a joint program examination for the Ph.D. degree in applied mathematics may use that examination as their master's degree final examination.

Thesis/Non-Thesis

24 - 27 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 12 hours from any MA 500 - 700 level course(s)
      - 6 hours from any 500 - 700 level course(s)
      - 6 hours from:
        - MA699 - MASTER'S THESIS (3 - 9)
  - Non-Thesis Seeking Students
    - Complete all of the following
      - 15 hours from any MA 600 - 700 level course(s)
      - 12 hours from any 500 - 700 level course(s)

Grand Total Credits: **30 - 33**

## Mathematical Sciences (Minor)

### Program Description

The minor in Mathematical Sciences allows students to explore their interests, strengthen key skills in mathematics, and/or learn a new discipline which can add potential career paths after graduation. For further information, please refer to the department web site at: <https://www.uah.edu/science/departments/math/ma-undergraduate-programs>

### Number of Credit Hours

21

### Minor Requirements

- Complete all of the following
  - Calculus I
    - Complete 1 of the following
      - Complete
        - MA150 - CALCULUS I WITH FOUNDATIONS A (3)
        - MA151 - CALCULUS I WITH FOUNDATIONS B (3)
      - Complete
        - MA171 - CALCULUS I (4)
    - Complete
      - MA172 - CALCULUS II (4)
      - MA201 - CALCULUS III (4)
      - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - 6 hours from any MA or ST 300 - 400 level course(s)

Grand Total Credits: **21 - 23**

## Mathematical Sciences (MS)

### Program Description

The MS in Mathematical Sciences prepares students planning a mathematics-oriented career in a high-tech environment, or a professional seeking to better understand the mathematics underlying their field. It qualifies a student to work in fields such as engineering, computer science, data science, among others, and can also serve as a stepping stone toward a PhD in Mathematics or in Applied Mathematics. For further information, please refer to the department web site at:

<https://www.uah.edu/science/departments/math/ma-graduate-programs>.

### Number of Credit Hours

33

### Degree Requirements

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
        - A thesis approved by the supervisory committee.

## Mathematical Sciences (MS) - Education (Concentration)

### Description

The MS in Mathematical Sciences with a concentration in Education leads to Class A Teaching Certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at <https://www.uah.edu/education/departments/curriculum-and-instruction/graduate-programs/alternative-fifth-year-program>.

### Concentration Requirements

Requirements

24 Total Credits

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- Complete all of the following
  - 3 hours from:
    - MA538 - METRIC SPACES W/APPLICA (3)
    - MA539 - MULTIDIMENSIONAL ANALYSIS (3)
  - 18 hours from:
    - MA542 - ALGEBRA (3)
    - MA544 - LINEAR ALGEBRA (3)
    - MA585 - PROBABILITY (3)
    - MA614 - NUM METHODS/LINEAR ALGEBRA (3)
    - MA633 - GEOMETRY (3)
    - ST687 - THEORY OF STATISTICS I (3)
  - 3 hours from any MA or ST 600 - 700 level course(s)

Education Requirements

9 Total Credits

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- 9 hours from any ED 500 - 600 level course(s)

Grand Total Credits: **33**

## Mathematical Sciences (MS) - Mathematics, General (Concentration)

### Description

The MS in Mathematics with a General concentration is the path for students pursuing the degree without also pursuing a teaching credential. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/math>.

### Concentration Requirements

Core Requirements

6 Total Credits

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- Complete all of the following
  - 3 hours from:
    - MA538 - METRIC SPACES W/APPLICA (3)
    - MA539 - MULTIDIMENSIONAL ANALYSIS (3)
  - 3 hours from:
    - MA544 - LINEAR ALGEBRA (3)
  - A final comprehensive examination is required of all candidates for a master's degree. The candidate will be examined on the coursework and thesis in Plan I and on the coursework in Plan II. In the Mathematical Sciences Department this examination is oral, except that Plan II students who have passed a joint program examination for the Ph.D. degree in applied mathematics may use that examination as their master's degree final examination.

Thesis/Non-Thesis Requirements

24 - 27 Total Credits

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- Complete 1 of the following
  - Thesis Seeking Students
    - Complete all of the following
      - 12 hours from any MA 500 - 700 level course(s)
      - 6 hours from any 500 - 700 level course(s)
      - 6 hours from:
        - MA699 - MASTER'S THESIS (3 - 9)
  - Non-Thesis Seeking Students
    - Complete all of the following
      - 12 hours from any MA 500 - 700 level course(s)
      - 12 hours from any MA 600 - 700 level course(s)
      - 3 hours from any 500 - 700 level course(s)

Grand Total Credits: **30 - 33**

## Mathematics, Applied (PhD)

### Program Description

The MS in Mathematical Sciences is designed to enable students to master a significant body of mathematics, including a specialty in Applied Mathematics; to relate this knowledge to a coherent area of science or engineering other than mathematics; and to carry on fundamental research in Applied Mathematics. A PhD in Applied Mathematics will open a door for many career opportunities such as teaching positions at a university level, research positions in academia or industry, government or consulting positions, among others. For further information, please refer to the department Web site at

<https://www.uah.edu/science/departments/math/ma-graduate-programs>.

## **Number of Credit Hours**

54

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

## **Major Requirements**

### Requirements

36 Total Credits

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- Complete all of the following
  - 12 hours from:
    - MA653 - REAL ANALYSIS I (3)
    - MA654 - REAL ANALYSIS II (3)
    - MA544 - LINEAR ALGEBRA (3)
    - MA614 - NUM METHODS/LINEAR ALGEBRA (3)
  - 18 hours from any MA 600 - 700 level course(s)
  - 6 hours from any 500 - 700 level course(s)

### Dissertation

18 Total Credits

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- 18 hours from:
  - MA799 - DOCTORAL DISSERTATION (3 - 9)

Grand Total Credits: **54**



## **Natural Disasters Impacts & Policy (Minor)**

### **Program Description**

The minor in Natural Disasters Impacts & Policy prepares students to understand the financial, ecological, and societal impacts of natural disasters and to assess risk-benefit analysis to advance existing preparedness, response, and recovery practices. It enhances the professional preparation of students in the engineering, business, and social science career fields. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/atmospheric-earth-science/aes-undergraduate-programs>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
    - AES103L - LABORATORY
    - AES104 - WEATHER & CLIMATE CHANGE (4)
    - AES104L - LABORATORY
    - AES402 - SCI & SOC ASPTS NATRL DISASTER (3)
    - AES407 - ENV THRTS, PUB POLY, & DEC MKG (3)
  - 7 hours from:
    - AES210 - COLLAPSE OF CIVILIZATIONS (3)
    - AES212 - SEVERE WEATHER ANALYSIS (4)
    - AES212L - LABORATORY
    - AES305 - HYDROLOGY (3)
    - AES307 - ENVIRONMENTAL ARCHEOLOGY (3)
    - AES313 - GEOGRAPHIC INFORMATION SYSTEMS (3)
    - AES321 - POLLUTION PROBLEMS (3)
    - AES370 - INTRODUCTION TO REMOTE SENSING (3)
    - AES414 - GEOSPATIAL APPLICATIONS (3)

Grand Total Credits: **21**

## **Optical Science & Engineering (PhD)**

### **Program Description**

The PhD in Optical Science and Engineering is an interdisciplinary graduate program between the Colleges of Science and Engineering. Optics stands today as an area of major scientific and technological importance. It is not only an enabling technology for multi-discipline work but is also widely recognized as a discipline in its own right. Optics is central in communication technology, biotechnology, nanotechnology, information processing, storage, and display as well as in health care and life sciences, remote sensing, national defense and industrial manufacturing. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/optical-science-engineering>.

### **Number of Credit Hours**

66

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

## **Major Requirements**

Phase 1

19 Total Credits

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- Complete all of the following
  - New full-time students typically come into the OSE program via a one academic year teaching assistantship in the department of physics or in one of the engineering departments.
  - Core Courses
  - Complete all of the following
    - Earned at least 1 of the following:
      - PH541 - GEOMETRICAL OPTICS (3)
      - OSE541 - GEOMETRICAL OPTICS (3)
    - Earned at least 1 of the following:
      - PH542 - PHYSICAL OPTICS (3)
      - OSE542 - PHYSICAL OPTICS (3)
    - Earned at least 1 of the following:
      - PH632 - FOURIER OPTICS (3)
      - OSE632 - FOURIER OPTICS (3)
    - Earned at least 1 of the following:
      - PH645 - LASERS I (3)
      - OSE645 - LASERS (3)
    - Earned at least 1 of the following:
      - PH546 - RADIOMETRY, DETECTORS & SOURCE (3)
      - OSE546 - RADIOMETRY, DETECTORS & SOURCE (3)
    - Complete
      - OSE654 - OPTICAL TESTING (3)
      - OSE653 - OPTICAL TESTING LAB (1)
  - To complete this phase and become eligible to continue, the student must pass the written Preliminary Examination (typically administered at the end of the spring semester) on the above topics. Only two attempts will be permitted. After successful completion of this phase, the student should have acquired the common optics background necessary for continuing in the doctoral

program. It is the student's responsibility to seek out a dissertation advisor during this first year and complete a draft Program of Study. Once the Preliminary Examination has been passed, a graduate committee will be formed and a final Program of Study will be completed and submitted to the OSE Program Director for review. The Program of Study will then be submitted to the Graduate School for final approval.

#### Phase II

29 Total Credits

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- Complete all of the following
  - Consists of completing coursework in the Program of Study. Much of this coursework will support the dissertation research to be conducted in Phase III. Credits earned toward a thesis based master's degree (including up to 9 hours of master's thesis) may be applied to the doctoral degree. Phase II is completed when the student has passed the Qualifying Examination which is prepared and administered by the student's graduate committee. This exam consists of both written and oral parts. Written questions are typically drawn from material covered in the courses listed on the Program of Study and may be written by any or all of the committee members. The student will be given a time limit for submitting the solutions (typically a week). The oral part of the exam consists of defending a proposal for dissertation research prepared by the student and distributed to the graduate committee at least two weeks prior to the exam. The proposal will demonstrate that the student is intimately familiar with the research to be done, that published research related to the proposal has been reviewed, and that the student has a clear understanding of how to proceed and can set realistic goals. If the student fails the Qualifying Examination, a second attempt will be scheduled. Only two attempts are allowed.
  - 29 hours from the following:
    - supporting graduate coursework

#### Phase III

18 Total Credits

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- Complete all of the following
  - Consists of all experimental and/or theoretical work needed to complete the student's dissertation. These activities will be directly supervised by the student's advisor with input from the supervisory committee obtained during regular meetings. There must be at least two supervisory committee meetings with the student before the dissertation defense. Since the Ph.D. is a research degree, recipients must demonstrate the ability to perform independent original research and to clearly communicate this work both in written and oral formats. A paper on the dissertation research must have been submitted to a recognized refereed technical journal before the Final Examination, which consists of a public, oral presentation and defense of the dissertation.
  - 18 hours from:
    - PH799 - DOCTORAL DISSERTATION (3 - 9)
    - OSE799 - DOCTORAL DISSERTATION (3 - 9)

#### Advisement

0 Total Credits

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- A student admitted to the program will schedule a meeting with the OSE Program Director for initial advisement and it is the student's responsibility to consult with all OSE faculty members in the intended area of specialization in order to arrive at a permanent advisor for dissertation research. A graduate supervisory committee will be assembled when the student has passed the Preliminary Examination and selected a research project. The committee will include an advisor and at least four other members. At least one of the committee members will be from a department other than the student's home department, which is typically Physics. The fifth member may also be from another university or outside any university as long as approval to serve has been granted by the School of Graduate Studies. The composition of the committee will follow the rules governing such committees as set forth by the graduate school degree requirements. The graduate committee is charged with supervision and approval of the student's research and course of study leading to the completion of all requirements for the degree.

#### Suggested Electives

0 Total Credits

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- Complete all of the following
  - The following elective optics courses are also available to students in the OSE program. See descriptions under indicated departments.
  - Electrical Engineering
    - - Course Not Found
      - Course Not Found
      - Course Not Found
      - EE604 - DIGITAL IMAGE PROCESSING (3)
      - EE633 - ELECTRO-OPTICAL ENGINEER (3)
      - Course Not Found
      - Course Not Found
      - Course Not Found
      - Course Not Found
      - Course Not Found
  - Optical Science
    - - OSE555 - INTRO QUANTUM MECHANICS I (3)
      - OSE655 - APPLIED QUANTUM MECHANICS (3)
      - OSE690 - SEL TOPICS IN OPT SCI & ENGR (1 - 3)
      - OSE742 - OPTICAL SCATTERING THEORY (3)
      - OSE755 - QUANTUM DEVICES (3)
      - OSE790 - SEL TOPICS IN OPT SCI & ENGR (1 - 3)
  - Physics
    - - PH544 - OPTOELECTRONICS (3)
      - PH570 - OPT & PHOTONIC SYSTEMS DESIGN (3)
      - PH642 - OPTICAL PHYSICS (3)
      - PH651 - QUANTUM MECHANICS I (3)
      - PH652 - QUANTUM MECHANICS II (3)
      - PH733 - QUANTUM DEVICES (3)
      - PH745 - LASERS II (3)
  - Mechanical Engineering
    - - Course Not Found
      - Course Not Found

Grand Total Credits: **66**

## Optics (Minor)

### Program Description

The minor in Optics is designed to give students majoring in disciplines other than Physics an in-depth treatment of optics and nanophotonics. This minor is especially relevant for engineering majors, and is readily obtainable within such a program with prior planning. For more information, please visit the college web site at <https://www.uah.edu/science/degree-programs/minors>

### Number of Credit Hours

24

### Minor Requirements

- Complete all of the following
  - Complete
    - PH110 - FRONTIERS IN SCIENCE (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - OPT341 - GEOMETRICAL OPTICS (3)
    - OPT411 - OPTICS LAB (3)
  - 3 hours from any OPT or PH 300 - 400 level course(s)

Grand Total Credits: **24**

## Physics (BS)

### Program Description

The BS in Physics teaches students the basic laws of nature and the universe and imparts critical thinking skills. Graduates find ready employment in physics, astronomy, engineering, physics-based computer modeling, medicine, intellectual property law, and mathematics or continue on to graduate study. Students may choose a concentration, a minor in another college subject, or a mixture of the two. For further information, please visit the department web site at <https://www.uah.edu/science/departments/physics/ph-undergraduate-programs>.

### Number of Credit Hours

120

### Degree Requirements

Degree Requirements

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- BS Degree Requirements (COS)
  - Complete all of the following
    - Must have a 2.0 GPA in major, minor, and overall
    - 30% of total degree requirements must be taken at 300 level or higher
    - No more than 4 credit hours of HPE may count in degree requirements
    - 12 of the last 18 credit hours must be taken at UAH
    - 25% of the major, minor, and overall coursework must be taken at UAH
    - No more than 50% of total degree requirement credit hours can come from a two-year school
    - A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

### General Education (Charger Foundations) Requirements

## Charger Foundations

41 Total Credits

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- Students must take one literature and one history course. Students must also take either a second literature or history course. If two history courses are taken, a sequence is required. Acceptable history sequences are (HY 103 + HY 104) and (HY 221 + HY 222).

## Area I: Freshman Composition

6 Total Credits

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- Charger Foundations - Area I
  - Complete 1 of the following
    - Complete all of the following
      - Earn a minimum grade of C- in all of the following:
        - EH101 - COLLEGE WRITING I (3)
      - Earn a minimum grade of C- in all of the following:
        - EH102 - COLLEGE WRITING II (3)
    - Complete all of the following
      - Earn a minimum grade of C- in at least 1 of the following:
        - EH103 - ACCELERATED COLLEGE WRITING (3)
        - EH105 - HONORS ENGLISH SEMINAR (3)
      - 3 hours from the following:  
Any General Elective

## Area II: Humanities and Fine Arts

12 Total Credits

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- Charger Foundations - Area II
  - Complete all of the following
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Fine Arts
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARS160 - DRAWING: FOUNDATIONS (3)
      - MU100 - INTRO TO MUSIC LITERATURE (3)
      - TH122 - THEATRE APPRECIATION (3)
      - FMA123 - INTRO TO FILM STUDIES (3)
    - 3 hours from:  
*keyboard\_arrow\_up*  
Area II: Humanities and Fine Arts - Literature
      - EH207 - READINGS LITERATURE/CULTURE I (3)
      - EH208 - READINGS LITERATURE/CULTURE 2 (3)
      - EH241 - LITERATURE WITHOUT BORDERS (3)
      - EH242 - MYTHOLOGY (3)
      - EH243 - PROTEST LITERATURE (3)
      - EH244 - HEROES &/OR MONSTERS (3)
      - EH245 - LOVE &/OR ROMANCE (3)
      - EH246 - SPECULATIVE REALITIES (3)
    - 3 hours from:  
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Area II: Humanities and Fine Arts - Non-Literature
      - AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
      - ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
      - ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
      - ARH103 - ARH SUR: WORLD ART (3)
      - ARH120 - ARH SUR: SPECIAL TOPICS (3)
      - CM113 - PUBLIC SPEAKING (3)

- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

- 3 hours from:

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)
- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTU STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

Area III: Mathematics and Sciences

11 Total Credits

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- Complete all of the following
  - Charger Foundations - Area III
    - Complete all of the following
      - 3 hours from:

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)



- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

- 8 hours from:

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

- Physics students must choose CH121, CH125, CH 123, and CH 126 to satisfy Area III: Mathematics and Sciences in Charger Foundations.

Area IV: History, Social, and Behavioral Sciences

12 Total Credits

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- Charger Foundations - Area IV

- Complete all of the following

- 3 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

- 9 hours from:

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)

- HY104 - WORLD HISTORY SINCE 1500 (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

Grand Total Credits: **41**

### **Area V (Pre-Professional) Requirements**

Area V (Pre-Professional) Requirements

21 Total Credits

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- Complete all of the following
  - hours from:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)

Computer Programming

- 3 hours from:
  - CS102 - INTRO TO C PROGRAMMING (3)
  - CS103 - INTRO PROGRAMMING USING JAVA (3)
  - CS104 - INTRO TO CS USING PYTHON (3)

Mathematics

- Complete all of the following
  - 18 hours from:
    - MA171 - CALCULUS I (4)
    - MA172 - CALCULUS II (4)
    - MA201 - CALCULUS III (4)
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
  - Based on Math placement, prerequisite MA 112 and/or MA 113 Mathematics courses may be required.

Grand Total Credits: **21**

## **Major Requirements**

Physics Core Requirements

28 Total Credits

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- 28 hours from:
  - PH110 - FRONTIERS IN SCIENCE (3)
  - PH111 - GEN PHYSICS W/CALCULUS I (3)
  - PH114 - GENERAL PHYSICS LAB I (1)
  - PH112 - GEN PHYSICS W/CALC II (3)
  - PH115 - GENERAL PHYSICS LAB II (1)
  - PH113 - GEN PHYSICS W/CALC III (3)
  - PH116 - GENERAL PHYSICS LAB III (1)
  - PH251 - SPECIAL RELATIVITY (1)
  - PH301 - INTERMEDIATE MECHANICS (3)
  - PH305 - MATH METHODS IN PHYSICS (3)
  - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - PH499 - PHYSICS PRACTICUM (3)

Grand Total Credits: **28**

## **Physics (BS) - Applied Physics (Concentration)**

### **Description**

The BS in Physics with concentration in Applied Physics focuses on preparing students for further graduate study at the Masters or PhD level. Students take upper-level courses on quantum mechanics, electrodynamics, statistical mechanics, computational physics, and advanced labs, and hence are well prepared for graduate school or private sector physics employment. For more information, please visit the department web site at <https://www.uah.edu/science/departments/physics/ph-undergraduate-programs>

### **Concentration Requirements**

Concentration Requirements

19 Total Credits

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- 19 hours from:
  - PH310 - INTERMEDIATE LAB I (2)
  - PH311 - INTERMEDIATE LAB II (2)
  - PH421 - THERMAL & STATISTICAL PHYSICS (3)
  - PH431 - INTERM ELECTRIC & MAGNETISM I (3)
  - PH432 - INTERM ELECTRIC & MAGNETISM II (3)
  - PH451 - INTRO QUANTUM MECHANICS I (3)
  - PH452 - INTRO QUANTUM MECHANICS II (3)

General Electives

11 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 11
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **30**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
    - PH110 - FRONTIERS IN SCIENCE (3)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 8 hours from:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 Hours Social & Behavioral Science
  - 2 Hours General Elective

Spring

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- Complete all of the following
  - 8 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - PH251 - SPECIAL RELATIVITY (1)
  - 3 Hours Social & Behavioral Science
  - 3 Hours Non-Literature Humanities
  - 1 Hour General Elective

Year 3

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Fall

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- Complete all of the following
  - 11 hours from:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH306 - APPLIED PHYSICS (3)
    - PH310 - INTERMEDIATE LAB I (2)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - 3 Hours Literature

Spring

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- Complete all of the following
  - 11 hours from:
    - PH301 - INTERMEDIATE MECHANICS (3)
    - PH305 - MATH METHODS IN PHYSICS (3)
    - PH311 - INTERMEDIATE LAB II (2)
    - PH421 - THERMAL & STATISTICAL PHYSICS (3)
  - 3 Hours History
  - 1 Hour General Elective

Year 4

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Fall

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- Complete all of the following
  - 6 hours from:
    - PH431 - INTERM ELECTRIC & MAGNETISM I (3)
    - PH451 - INTRO QUANTUM MECHANICS I (3)
  - 3 Hours 2nd History
  - 3 Hours Fine Art
  - 3 Hours General Elective (300+ or 400+ Course)

Spring

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- Complete all of the following
  - 9 hours from:
    - PH432 - INTERM ELECTRIC & MAGNETISM II (3)
    - PH452 - INTRO QUANTUM MECHANICS II (3)
    - PH499 - PHYSICS PRACTICUM (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
  - 3 Hours General Elective

## **Physics (BS) - Astronomy & Astrophysics (Concentration)**

## **Description**

The BS in Physics with a concentration in Astronomy and Astrophysics teaches students about cosmological phenomena ranging from the sun and stars, to the solar system and galaxy, and to the universe. With some of the advanced physics courses, it also prepares them for further graduate study in this area. For more information, please visit the department web site at <https://catalog.uah.edu/undergrad/colleges-departments/science/physics/physics-bs>

## **Concentration Requirements**

Concentration Requirements

17 Total Credits

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- Complete all of the following
  - 14 hours from:
    - AST106 - EXPLORING THE COSMOS I (4)
    - AST106L - EXPLORING THE COSMOS I LAB
    - AST107 - EXPLORING THE COSMOS II (4)
    - AST107L - EXPLORING THE COSMOS II LAB
    - AST371 - INTRO TO ASTROPHYSICS (3)
    - AST471 - ASTROPHYSICS (3)

Concentration Electives

- 3 hours from any AST, OPT, or PH 300 - 400 level course(s)

General Electives

13 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 13
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **30**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - AST106 - EXPLORING THE COSMOS I (4)
    - AST106L - EXPLORING THE COSMOS I LAB
    - MA171 - CALCULUS I (4)
    - PH110 - FRONTIERS IN SCIENCE (3)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - AST107 - EXPLORING THE COSMOS II (4)

- AST107L - EXPLORING THE COSMOS II LAB
- MA172 - CALCULUS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 11 hours from:
    - MA201 - CALCULUS III (4)
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 hours Literature

Spring

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- Complete all of the following
  - 8 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - PH251 - SPECIAL RELATIVITY (1)
  - 3 Hours History
  - 3 Hours Social & Behavioral Science

Year 3

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Fall

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- Complete all of the following
  - 7 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 Hours Non-Literature Humanities
  - 3 Hours 2nd History

Spring

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- Complete all of the following
  - 13 hours from:
    - AST371 - INTRO TO ASTROPHYSICS (3)
    - CH123 - GENERAL CHEMISTRY II (3)

- CH126 - GENERAL CHEMISTRY LAB II (1)
- PH301 - INTERMEDIATE MECHANICS (3)
- PH305 - MATH METHODS IN PHYSICS (3)
- 3 Hours Fine Art

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - AST471 - ASTROPHYSICS (3)
  - 3 Hours Astronomy and Astrophysics Concentration Elective (PH or AST 300+ or 400+ Course)
  - 6 Hours General Electives (300+ or 400+ Courses)
  - 3 Hours Social & Behavioral Science

Spring

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- Complete all of the following
  - 3 hours from:
    - PH499 - PHYSICS PRACTICUM (3)
  - 3 Hours Astronomy and Astrophysics Concentration Elective (PH or AST 400+ Course)
  - 6 Hours General Electives (300+ or 400+ Courses)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

## **Physics (BS) - JUMP: BS PH, Physics (MS)**

### **JUMP Program Description**

The JUMP (Joint Undergraduate Masters Program) from a BS in Physics to an MS in Physics is designed to encourage talented undergraduate students to pursue a master's degree at UAH. Students who meet the eligibility criteria can begin taking graduate courses in their junior year while paying undergraduate tuition. Approved courses count towards both the undergraduate and graduate degrees. For further information, please refer to the JUMP web site at <https://www.uah.edu/jump>.

### **Approved Master's Program**

Physics (MS)

### **Max Shared Hours**

12

### **Minimum GPA**

3.5

### **JUMP Launch (Undergraduate Program)**

JUMP\_PH@uah.edu

### **JUMP Landing (Graduate Program)**

MS\_Physics@uah.edu

## **Physics (BS) - Optics (Concentration)**



## **Description**

The BS in Physics with a concentration in Optics requires students to take advanced third- and fourth-year courses in optics and nanophotonics, which is the study of light and electromagnetic radiation in materials at the quantum mechanics level. Applications of this material are legion, including solar cells, optical communication, biophysics and medicine. For more information, please visit <https://www.uah.edu/science/departments/physics/ph-undergraduate-programs>.

## **Concentration Requirements**

Concentration Requirements

15 Total Credits

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- Complete all of the following
  - 9 hours from:
    - OPT341 - GEOMETRICAL OPTICS (3)
    - OPT342 - PHYSICAL OPTICS (3)
    - OPT411 - OPTICS LAB (3)
  - Concentration Electives
  - Complete all of the following
    - 3 hours from any OPT or PH 300 - 400 level course(s)
    - 3 hours from any OPT or PH 400 - level course(s)

General Electives

15 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 15
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **30**

## **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH125 - GENERAL CHEMISTRY LAB I (1)
    - MA171 - CALCULUS I (4)
    - PH110 - FRONTIERS IN SCIENCE (3)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)

- MA172 - CALCULUS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH114 - GENERAL PHYSICS LAB I (1)
- 3 hours from:
  - EH102 - COLLEGE WRITING II (3)
  - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 8 hours from:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 Hours Social & Behavioral Science
  - 1 Hour General Elective

Spring

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- Complete all of the following
  - 8 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - PH251 - SPECIAL RELATIVITY (1)
  - 3 Hours Social & Behavioral Science
  - 3 Hours Literature

Year 3

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Fall

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- Complete all of the following
  - 6 hours from:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - 3 Hours Fine Art
  - 3 Hours History
  - 3 Hours Non-Literature Humanities

Spring

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- Complete all of the following
  - 6 hours from:
    - PH301 - INTERMEDIATE MECHANICS (3)
    - PH305 - MATH METHODS IN PHYSICS (3)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature

- 3 Hours 2nd History
- 3 Hours General Elective

Year 4

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Fall

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- Complete all of the following
  - 3 hours from:
    - OPT341 - GEOMETRICAL OPTICS (3)
  - 3 Hours Optics Concentration Elective (PH or OPT 300+ or 400+ Course)
  - 6 Hours General Electives (300+ or 400+ Courses)
  - 4 Hours General Elective

Spring

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- Complete all of the following
  - 9 hours from:
    - OPT342 - PHYSICAL OPTICS (3)
    - OPT411 - OPTICS LAB (3)
    - PH499 - PHYSICS PRACTICUM (3)
  - 3 Hours Optics Concentration Elective (PH or OPT 300+ or 400+ Course)
  - 3 Hours General Elective (300+ or 400+ Course)

## **Physics (BS) - Physics, General (Concentration)**

### **Description**

The BS in Physics with a General concentration is the path for students pursuing the degree without also pursuing a concentration in optics, applied physics, or astronomy & astrophysics. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/physics>.

### **Concentration Requirements**

Concentration Requirements

8 Total Credits

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Physics Electives

- 8 hours from any AST, OPT, or PH 300 - 400 level course(s)

General Electives

22 Total Credits

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- Complete all of the following
  - Earned at least this many additional elective credits: 22
  - Elective hours vary by program, please see advisor.

Grand Total Credits: **30**

### **4-Year Plan**

Year 1

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Fall

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- Complete all of the following
  - 11 hours from:
    - CH121 - GENERAL CHEMISTRY I (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA171 - CALCULUS I (4)
    - PH110 - FRONTIERS IN SCIENCE (3)
  - Earned at least 1 of the following:
    - FYE101S - CHARGER SUCCESS - SCIENCE (1)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 hours from:
    - EH101 - COLLEGE WRITING I (3)
    - EH105 - HONORS ENGLISH SEMINAR (3)

Spring

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- Complete all of the following
  - 12 hours from:
    - CH123 - GENERAL CHEMISTRY II (3)
    - CH126 - GENERAL CHEMISTRY LAB II (1)
    - MA172 - CALCULUS II (4)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
  - 3 hours from:
    - EH102 - COLLEGE WRITING II (3)
    - EH103 - ACCELERATED COLLEGE WRITING (3)

Year 2

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Fall

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- Complete all of the following
  - 8 hours from:
    - MA201 - CALCULUS III (4)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
  - 3 hours from:
    - CS102 - INTRO TO C PROGRAMMING (3)
    - CS104 - INTRO TO CS USING PYTHON (3)
  - 3 Hours History

Spring

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- Complete all of the following
  - 8 hours from:
    - MA238 - APPL DIFFERENTIAL EQUATIONS (3)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH116 - GENERAL PHYSICS LAB III (1)
    - PH251 - SPECIAL RELATIVITY (1)
  - 3 Hours History
  - 3 Hours Fine Art
  - 3 Hours General Elective

Year 3

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Fall

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- Complete all of the following
  - 6 hours from:
    - MA244 - INTRO TO LINEAR ALGEBRA (3)
    - PH351 - INTRODUCTION TO MODERN PHYSICS (3)
  - 3 Hours Literature
  - 3 Hours Social & Behavioral Science
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 6 hours from:
    - PH301 - INTERMEDIATE MECHANICS (3)
    - PH305 - MATH METHODS IN PHYSICS (3)
  - 3 Hours Social & Behavioral Science
  - 6 Hours General Electives (300+ or 400+ Course)

Year 4

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Fall

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- Complete all of the following
  - 6 Hours Physics Electives (AST or OPT or PH 300+ or 400+ Courses)
  - 3 Hours Non-Literature Humanities
  - 3 Hours General Elective (300+ or 400+ Course)
  - 3 Hours General Elective

Spring

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- Complete all of the following
  - 3 hours from:
    - PH499 - PHYSICS PRACTICUM (3)
  - 3 Hours Physics Elective (AST or OPT or PH 300+ or 400+ Course)
  - 3 Hours Humanities, 2nd Fine Art, or 2nd Literature
  - 6 Hours General Electives (300+ or 400+ Courses)

## **Physics (Minor)**

### **Program Description**

The minor in Physics is intended to give students further exposure to this fundamental discipline. Requirements are minimal, especially for engineering and other science majors, and include a 100-level survey course on current topics of interest throughout STEM. For more information, please visit the college web site at <https://www.uah.edu/science/degree-programs/minors>.

### **Number of Credit Hours**

21

### **Minor Requirements**

- Complete all of the following
  - Complete
    - PH110 - FRONTIERS IN SCIENCE (3)
    - PH111 - GEN PHYSICS W/CALCULUS I (3)
    - PH114 - GENERAL PHYSICS LAB I (1)
    - PH112 - GEN PHYSICS W/CALC II (3)
    - PH115 - GENERAL PHYSICS LAB II (1)
    - PH113 - GEN PHYSICS W/CALC III (3)
    - PH116 - GENERAL PHYSICS LAB III (1)
  - 6 hours from any PH, AST, or OPT 300 - 400 level course(s)

Grand Total Credits: **21**

## **Physics (MS)**

### **Program Description**

The MS in Physics is designed for students who want to extend their knowledge of physics beyond a BS and obtain an advanced degree. It provides in-depth content knowledge and analytical skills. The thesis option is especially attractive for private-sector employment and many students incorporate this option into full-time employment. For more information, please visit the department web site at <https://www.uah.edu/science/departments/physics/ph-graduate-programs>.

### **Number of Credit Hours**

33

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

## **Major Requirements**

### Core Courses

21 Total Credits

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- Complete all of the following
  - Complete
    - PH601 - CLASSICAL DYNAMICS I (3)
    - PH607 - MATHEMATICAL METHODS I (3)
    - PH609 - MATHEMATICAL METHODS II (3)
    - PH621 - STAT MECH KINETIC THRY I (3)
    - PH631 - ELECTROMAGNETIC THEORY I (3)
    - PH651 - QUANTUM MECHANICS I (3)
    - PH652 - QUANTUM MECHANICS II (3)
  - - PH792 - PHYSICS SEMINAR (1)

Grand Total Credits: **21**

## Physics (MS) - Education (Concentration)

### Description

The MS in Physics with a concentration in Education leads to Class A Teaching Certification. This concentration is open to teachers who do not hold the Alabama Class B Middle/Junior High or High School Certificate. Students should contact the Education Department for preliminary advisement on admission and general program requirements. For further information, please refer to the department web site at [https://www.uah.edu/images/Education/Program\\_Checklists/mat\\_checklists/mat\\_physics.pdf](https://www.uah.edu/images/Education/Program_Checklists/mat_checklists/mat_physics.pdf).

### Concentration Requirements

Physics Courses

9 Total Credits

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- Complete all of the following
  - Complete
    - PH679 - EDUCATION CAPSTONE COURSE (3)
  - 6 hours from any PH 500 - 700 level course(s)

Education Courses

21 Total Credits

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- Complete
  - ED530 - APPLIED MULTICULTURALISM (3)
  - ED535 - INTRO APPLIED EDUCATIONAL RES (3)
  - ED540 - COGN DEV THEORIES LEARNING (3)
  - ED545 - CURR & INSTR IN SEC SCHOOLS (3)
  - ED565 - INTRO DIFFERENTIATED INSTRUCTI (3)
  - ED580 - PROJECT BASED LEARNING (3)
  - ED620 - USING TECH REACH SPEC POP (3)

Grand Total Credits: **30**

## Physics (MS) - Optics and Photonics Technology (Concentration)

### Description

The MS in Physics with a concentration in Optics and Photonics Technology is suggested for students coming from a physics background. Students select from courses in optics, optical systems, management and marketing, and additional technical electives. It is a professional degree and is not intended to serve as the basis for PhD study. For more information, please refer to the department web site at <https://catalog.uah.edu/grad/colleges-departments/science/physics/physics-ms>.

### Concentration Requirements

Optics and Photonics Technology Curriculum

12 Total Credits

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- Complete all of the following
  - 6 hours from any PH or OPT 500 - 700 level course(s)
  - 6 hours from:
    - PH699 - MASTER'S THESIS (3 - 6)
  - Write and defend a Master's thesis.

Grand Total Credits: **12**



## Physics (MS) - Physics, General (Concentration)

### Description

The MS in Physics with a General concentration is the path for students pursuing the degree without also pursuing a teaching credential or the concentration in Optics and Photonics Technology. For further information, please refer to the department web site at <https://www.uah.edu/science/departments/physics>.

### Concentration Requirements

Thesis or Non-Thesis

9 - 12 Total Credits

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- Complete 1 of the following
  - Thesis
    - Complete all of the following
      - 3 hours from any PH 500 - 700 level course(s)
      - 6 hours from:
        - PH699 - MASTER'S THESIS (3 - 6)
        - Write and defend a Master's thesis.
  - Non-Thesis
    - 12 hours from any PH 500 - 700 level course(s)

Grand Total Credits: **9 - 12**

## Physics (PhD)

### Program Description

The PhD in Physics educates students to become independent researchers in physics, astronomy, or astrophysics, using a methodology that is either experimental, theoretical, computational, or hybrid. Research areas include general optics, biophysics, nanophotonics and materials, solar physics, and galactic to cosmological astrophysics. These research areas are further complemented by the variety of research performed at the NASA Marshall Space Flight Center and a vibrant local private sector research community. For more information, please refer to the department web site at <https://www.uah.edu/science/departments/physics/ph-graduate-programs>.

### Number of Credit Hours

69

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

### Graduate School PhD Requirements

- Complete all of the following
  - 48 hours of graduate coursework (excluding dissertation research)
  - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
  - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
  - A minimum of 18 semester hours of dissertation research (799).
  - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate dean must also approve the committee and does so by signing the program of study.
  - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
  - A dissertation approved by the supervisory committee.

## **Major Requirements**

### Requirements

48 Total Credits

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- Complete all of the following
  - Core Requirements
    - 24 hours from:
      - PH601 - CLASSICAL DYNAMICS I (3)
      - PH607 - MATHEMATICAL METHODS I (3)
      - PH609 - MATHEMATICAL METHODS II (3)
      - PH621 - STAT MECH KINETIC THRY I (3)
      - PH631 - ELECTROMAGNETIC THEORY I (3)
      - PH651 - QUANTUM MECHANICS I (3)
      - PH652 - QUANTUM MECHANICS II (3)
      - PH732 - ELECTROMAGNETIC TH II (3)
  - Elective Requirements
    - 24 hours from any PH 500 - 700 level course(s)
  - Seminar Requirements
    - Complete all of the following
      - PH792 - PHYSICS SEMINAR (1)
      - Three semesters of PH 792 with a grade of "S". Seminar semester hours do not count toward the total required credits.

### Dissertation Requirements

18 Total Credits

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- 18 hours from:
  - PH799 - DOCTORAL DISSERTATION (3 - 9)

Grand Total Credits: **66**

## Software Engineering (Graduate Certificate)

### Program Description

The graduate certificate in Software Engineering provides a solid background in advanced software engineering principles and practice as applied to large and complex systems. In addition, it allows students to focus further in specialization areas of interest to many software engineers: technology management, cybersecurity, and statistical analysis. For further information, please refer to the department website at <https://www.uah.edu/science/departments/computer-science/cs-graduate-programs>

### Number of Credit Hours

15

### Degree Requirements

- CS Breadth Requirements
  - Complete all of the following
    - Applicants to graduate programs in Computer Science must satisfy the following breadth requirements before admission to the program.
    - The breadth requirements can be satisfied in one of the following ways: Completion of the course at UAH with a grade of B or better; Completion of an equivalent course at another institution with a grade of B or better; Testing out of the course, where permitted by departmental policy
  - Mathematics
    - 14 hours from:
      - MA171 - CALCULUS I (4)
      - MA172 - CALCULUS II (4)
      - MA244 - INTRO TO LINEAR ALGEBRA (3)
      - MA385 - INTRO TO PROBABILITY & STATIST (3)
  - Computer Science
    - 24 hours from:
      - CS121 - COMPUTER SCIENCE I (3)
      - CS214 - INTRO DISCRETE STRUCTURE (3)
      - CS221 - COMP SCI II: DATA STRUCTURES (3)
      - CS309 - COMPUTER ORG & SWTCHNG THRY (3)
      - CS317 - INTRO DESIGN/ANALYSIS OF ALG (3)
      - CS321 - INTRO OBJECT-ORIENTED PROG JAV (3)
      - CS413 - INTRO DIGITAL COMP ARCHITECTUR (3)
      - CS490 - INTRO TO OPERATING SYSTEMS (3)

### Major Requirements

Requirements

15 Total Credits

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- Complete all of the following
  - 6 hours from:
    - CS650 - SOFT'W ENGINEERING PROC (3)
    - CS652 - OBJECT-ORIENTED DESIGN (3)
  - 3 hours from:
    - CS585 - INTRO CYBERSECURITY ENGR (3)
    - CPE549 - INTRO TO CYBERSECURITY ENINRG (3)
  - 6 hours from:
    - CS553 - CLIENT/SERVER ARCHITECTURES (3)
    - CPE555 - SECURE SOFTWARE DEV (3)
    - CPE657 - SOFTWARE STUDIO (3)
    - ISE690 - STATISTICAL METHODS FOR ENGR (3)

Grand Total Credits: **15**

## Space Science (MS)

### Program Description

The MS in Space Science provides opportunities for students to be introduced to and engage in innovative research in solar physics, heliospheric science, cosmic ray physics, and high-energy astrophysics with faculty from the Department of Space Science and with our research partners: The UAH Center for Space Plasma and Aeronomic Research and Marshall Space Flight Center. The department provides a unique unified Space Science graduate program under the umbrella of a single university department. For more information, please visit <https://www.uah.edu/science/departments/space-science>.

### Number of Credit Hours

32

### Degree Requirements

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

#### Graduate School Masters Requirements

- Complete all of the following
  - Master's Transfer Credits
    - With permission from the major department, students may transfer up to twelve (12) semester hours of acceptable graduate credit earned in an approved institution and may count it toward a master's degree
  - Complete 1 of the following
    - Non-Thesis
      - 30 semester hours of graduate coursework.
    - Thesis
      - Complete all of the following
        - 24 semester hours of graduate course work
        - 6 credit hours of thesis coursework (699)
        - A supervisory committee is appointed for each student working toward the master's degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
      - A thesis approved by the supervisory committee.

### Major Requirements

#### Core Courses

15 Total Credits

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- Complete
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - SPA610 - ADV MATH METHDS FOR SPA SCI (3)
  - SPA622 - CLASSICAL & QUANTUM STATISTICS (3)
  - SPA624 - SPACE PHYSICS I (3)
  - SPA631 - WAVES AND FIELDS (3)

#### Required Courses

2 Total Credits

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- Complete
  - SPA582 - SCIENCE CAREER PREP (1)

- SPA796 - JOURNAL CLUB (1)

Thesis/Non-Thesis Options

15 Total Credits

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- Complete 1 of the following

Thesis

- Complete all of the following

- 9 hours from:

- SPA526 - SPACE WEATHER (3)
- SPA623 - TRANSPORT PROCESSES IN SPACE (3)
- SPA625 - SPACE PHYSICS II (3)
- SPA627 - HIGH ENERGY RADIATION DET&MSRM (3)
- SPA685 - ANALYSIS OF SPACECRAFT DATA (3)
- SPA629 - ASTROPHYSICAL FLUID DYNAMICS (3)
- SPA630 - WAVES IN FLUIDS (3)
- SPA662 - COMPUTATIONAL PHYSICS (3)
- SPA663 - COMPUTATIONAL FLUID DYNMC &MHD (3)
- SPA689 - SELECTED TOPICS (1 - 3)
- SPA741 - PHYSICS OF COSMIC RAYS (3)
- SPA742 - MULTIMESSENGER ASTROPHYSICS (3)
- SPA771 - COMPETITIVE GRANT WRITING WKSP (1)
- SPA789 - SELECTED TOPICS (3)

- 6 hours from:

- SPA699 - MASTER'S THESIS (1 - 6)

- Write and defend a Master's thesis.

Non-Thesis

- Complete all of the following

- 15 hours from:

- SPA526 - SPACE WEATHER (3)
- SPA623 - TRANSPORT PROCESSES IN SPACE (3)
- SPA625 - SPACE PHYSICS II (3)
- SPA627 - HIGH ENERGY RADIATION DET&MSRM (3)
- SPA628 - SOLAR PHYSICS (3)
- SPA629 - ASTROPHYSICAL FLUID DYNAMICS (3)
- SPA630 - WAVES IN FLUIDS (3)
- SPA662 - COMPUTATIONAL PHYSICS (3)
- SPA663 - COMPUTATIONAL FLUID DYNMC &MHD (3)
- SPA685 - ANALYSIS OF SPACECRAFT DATA (3)
- SPA741 - PHYSICS OF COSMIC RAYS (3)
- SPA742 - MULTIMESSENGER ASTROPHYSICS (3)
- SPA771 - COMPETITIVE GRANT WRITING WKSP (1)
- SPA789 - SELECTED TOPICS (3)

- Pass a Comprehensive Examination ("Comps"). The Comps are offered annually during the summer semester and consist of three sections: (a) Electromagnetic Theory, (b) Classical and Quantum Statistics, and (c) Plasma Physics. A passing grade of 40 percent or above in all three sections is required for a M.S. pass.

Grand Total Credits: **32**

## Space Science (PhD)

## **Program Description**

The PhD in Space Science provides opportunities for students to become independent researchers that engage in cutting edge theory, modeling, observational, and experimental research in solar physics, heliospheric science, cosmic ray physics, and high-energy astrophysics with faculty from the Department of Space Science and with our research partners: The UAH Center for Space Plasma and Aeronomic Research, Marshall Space Flight Center, and the CFD Research Corporation. The department provides a unique unified Space Science graduate program under the umbrella of a single university department. For more information, please visit <https://www.uah.edu/science/departments/space-science>.

## **Number of Credit Hours**

70

## **Degree Requirements**

- Graduate School Degree Requirements
  - Complete all of the following
    - Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
    - No grade of D or F may be counted toward a graduate degree.
    - At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
    - In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.
- Graduate School PhD Requirements
  - Complete all of the following
    - 48 hours of graduate coursework (excluding dissertation research)
    - A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
    - A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48 hour requirement.
    - A minimum of 18 semester hours of dissertation research (799).
    - A supervisory committee is appointed for each student working toward the 'PhD degree by the department chair. The graduate The graduate dean must also approve the committee and does so by signing the program of study.
    - The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the Supervisory Committee.
    - A dissertation approved by the supervisory committee.

## **Major Requirements**

Transfer Coursework

0 Total Credits

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- All credit toward the Ph.D., which has not been earned at UAH, must be acceptable graduate credit from an approved institution. Such credit may be transferred with the approval of the major Department Chair if completed with a grade of B or better. A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).

Core Courses

18 Total Credits

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- Complete
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - SPA610 - ADV MATH METHDS FOR SPA SCI (3)
  - SPA622 - CLASSICAL & QUANTUM STATISTICS (3)
  - SPA623 - TRANSPORT PROCESSES IN SPACE (3)
  - SPA624 - SPACE PHYSICS I (3)
  - SPA631 - WAVES AND FIELDS (3)

Required Courses

4 Total Credits

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- Complete all of the following
  - Complete
    - SPA582 - SCIENCE CAREER PREP (1)
  - 3 hours from:
    - SPA796 - JOURNAL CLUB (1)
  - Complete SPA 796 three times with each time counting towards your degree.

Electives

30 Total Credits

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- 30 hours from any SPA 500 - 700 level course(s)

Dissertation

18 Total Credits

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- Complete all of the following
  - 18 hours from:
    - SPA799 - DOCTORAL DISSERTATION (0 - 9)
  - Write and defend a Ph.D. dissertation.

Grand Total Credits: **70**

## **4-Year Plan**

Year 1

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete
  - SPA522 - INTRODUCTION TO PLASMA PHYSICS (3)
  - SPA582 - SCIENCE CAREER PREP (1)
  - SPA610 - ADV MATH METHDS FOR SPA SCI (3)

- SPA622 - CLASSICAL & QUANTUM STATISTICS (3)

Spring

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- Complete all of the following
  - Complete
    - SPA624 - SPACE PHYSICS I (3)
    - SPA631 - WAVES AND FIELDS (3)
    - SPA796 - JOURNAL CLUB (1)
  - 3 HOURS OF ELECTIVES: From any SPA 500 - 700 level course(s)

Year 1 Additional Requirements

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- Complete all of the following
  - SUBMIT THE PROGRAM OF STUDY: Students will work with the department during their first semester to develop an initial program of study (POS) that captures the core, required, and elective coursework as listed in the catalog for the first three semesters. The POS will be approved by the department and submitted to the Graduate School for approval by the Graduate Dean.
  - 
  - COMPREHENSIVE EXAM: Students must pass a Comprehensive Examination ("Comps"). The Comps are offered annually during the summer semester and consist of three sections: (a) Electromagnetic Theory, (b) Classical and Quantum Statistics, and (c) Plasma Physics. Students must complete SPA 522, SPA 622, and SPA 631 in order to qualify to take the exam.
  - 
  - COMPREHENSIVE EXAM PASS/FAIL CONDITIONS: A passing grade of 60 percent or above in all three sections is required for a Ph.D. pass.
  - 
  - FORM A SUPERVISORY COMMITTEE AND FINALIZE THE PROGRAM OF STUDY: After completing the comprehensive exam, the student will form a Ph.D. committee that will normally consist of the student's faculty advisor and at least four other members from the UAH graduate faculty. The department encourages students to invite at least one committee member external to the department. The supervisory committee and the student should meet to develop a complete program of study for the student. Any changes to the initial program of study must be submitted on a "Change to Program of Study" form.

Year 2

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No Rules

Fall

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- Complete all of the following
  - Complete
    - SPA796 - JOURNAL CLUB (1)
  - 9 HOURS OF ELECTIVES: From any SPA 500 - 700 level course(s)

Spring

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- Complete all of the following
  - Complete
    - SPA623 - TRANSPORT PROCESSES IN SPACE (3)
    - SPA796 - JOURNAL CLUB (1)
  - 6 HOURS OF ELECTIVES: From any SPA 500 - 700 level course(s)

Year 2 Additional Requirements

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- Complete all of the following
  - ANNUAL RESEARCH ASSESSMENT: Once students have passed the comprehensive exam and have formed the supervisory committee, they will be expected to participate in an annual research assessment (ARA) to review their research progress. This assessment will occur during the Spring



of each year. Students who make satisfactory progress will be considered to attend the annual American Geophysical Union (AGU) conference the following Fall.

- 
- APPLYING FOR A MASTER'S DEGREE: Students in the Space Science Ph.D. Program are encouraged to apply for a Master's degree in Space Science (non-thesis) after they have completed the appropriate 32 hours of core, required, and elective coursework and passed the Comprehensive Exam but have not yet taken the Qualifying Exam. Students must submit their application through Graduate Admissions no later than one semester prior to the conferral date of the non-thesis Master's degree. International students must take care to allow at least two consecutive semesters between the conferral date of the master's non-thesis degree, and the conferral date of the Ph.D. degree.

Year 3

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No Rules

Fall

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- Complete all of the following
  - Complete
    - SPA799 - DOCTORAL DISSERTATION (0 - 9)
  - 6 HOURS OF ELECTIVES: From any SPA 500 - 700 level course(s)

Spring

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- Complete all of the following
  - Complete
    - SPA799 - DOCTORAL DISSERTATION (0 - 9)
  - 6 HOURS OF ELECTIVES: From any SPA 500 - 700 level course(s)

Year 3 Additional Requirements

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- Complete all of the following
  - QUALIFYING EXAM: The Department of Space Science PhD program includes a qualifying exam where candidates present their dissertation plan to their committee. This presentation is accompanied by a written research plan ("qualifier proposal") that must be submitted to the committee two weeks before the presentation. Committee members may submit written questions related to topics covered in the proposal to the candidate up to one week before the presentation so that the candidate can incorporate his/her responses into the presentation.
  - 
  - QUALIFYING EXAM PASS/FAIL CONDITIONS: Both the dissertation topic and expected approach(es) must be clearly delineated to the committee's satisfaction in order for a pass to be granted. The presentation of the oral dissertation research proposal must be scheduled through the Graduate School at least two weeks in advance. Once this review is complete, the results of the Qualifying Examination are reported to the Graduate School within two working days on the prescribed form. The presentation of the oral dissertation proposal may be given no more than twice.

Year 4

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No Rules

Fall

*keyboard\_arrow\_up*

- Complete
  - SPA799 - DOCTORAL DISSERTATION (0 - 9)

Spring

*keyboard\_arrow\_up*

- Complete
  - SPA799 - DOCTORAL DISSERTATION (0 - 9)

## Year 4 Additional Requirements

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- Complete all of the following
  - JOURNAL PUBLICATION: Students must have a first-authored peer-reviewed paper published or accepted in a major international journal before their graduation date. Examples of acceptable journals include The Astrophysical Journal, Journal of Geophysical Research, Physics of Plasmas, Geophysical Research Letters, and Physical Review.
  - 
  - DISSERTATION DEFENSE: Students will write and defend a Ph.D. dissertation. A complete version of the dissertation or thesis must be sent to the committee at least one week before the date of the PhD or MS defense. While it is normal for candidates to make changes to their dissertation/thesis following the defense, the version submitted to the committee must be in a "final" state. A copy of the research paper that has been accepted for publication (as required by the PhD program) should be sent to the committee along with the dissertation.

## General College

### Charger Foundations

#### Degree Requirements

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Area I: Freshman Composition

- EH101 - COLLEGE WRITING I (3)
- EH102 - COLLEGE WRITING II (3)
- EH103 - ACCELERATED COLLEGE WRITING (3)
- EH105 - HONORS ENGLISH SEMINAR (3)

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Area II: Humanities and Fine Arts - Fine Arts

- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARS160 - DRAWING: FOUNDATIONS (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- TH122 - THEATRE APPRECIATION (3)
- FMA123 - INTRO TO FILM STUDIES (3)

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Area II: Humanities and Fine Arts - Non-Literature

- AMS229 - ANCIENT & MEDIEVAL WORLDS (3)
- ARH100 - ARH SUR: ANCIENT-MEDIEVAL (3)
- ARH101 - ARH SUR: RENAISSANCE-MODERN (3)
- ARH103 - ARH SUR: WORLD ART (3)
- ARH120 - ARH SUR: SPECIAL TOPICS (3)
- CM113 - PUBLIC SPEAKING (3)
- FMA123 - INTRO TO FILM STUDIES (3)
- MU100 - INTRO TO MUSIC LITERATURE (3)
- PHL101 - INTRODUCTION TO PHILOSOPHY (3)
- PHL102 - INTRO TO ETHICS (3)
- PHL103 - INTRODUCTION TO LOGIC (3)
- PHL150 - TECH, SCIENCE & HUMAN VALUES (3)
- TH122 - THEATRE APPRECIATION (3)
- WGS200 - INTRO WOMENS/GENDER/SEXLTY STU (3)
- WLC204 - INTERNATIONAL CINEMA (3)

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Area II: Humanities and Fine Arts - Literature

- EH207 - READINGS LITERATURE/CULTURE I (3)
- EH208 - READINGS LITERATURE/CULTURE 2 (3)
- EH241 - LITERATURE WITHOUT BORDERS (3)
- EH242 - MYTHOLOGY (3)

- EH243 - PROTEST LITERATURE (3)
- EH244 - HEROES &/OR MONSTERS (3)
- EH245 - LOVE &/OR ROMANCE (3)
- EH246 - SPECULATIVE REALITIES (3)

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Area II: Humanities and Fine Arts - WLC 101

- WLC101A - INTRO FOREIGN LANG I: ARABIC (3)
- WLC101F - INTRO FOREIGN LANG I:FRENCH (3)
- WLC101G - INTRO FOREIGN LANG I:GERMAN (3)
- WLC101J - INTRO FOREIGN LANG I:JAPANESE (3)
- WLC101MS - INTRO TO MEDICAL SPANISH (3)
- WLC101R - INTRO FOREIGN LANG I:RUSSIAN (3)
- WLC101S - INTRO FOREIGN LANG I: SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 102

- WLC102A - INTRO FOREIGN LANG II: ARABIC (3)
- WLC102F - INTRO FOREIGN LANG II:FRENCH (3)
- WLC102G - INTRO FOREIGN LANG II:GERMAN (3)
- WLC102J - INTRO FOREIGN LANG II:JAPANESE (3)
- WLC102MS - INTRO TO MEDICAL SPANISH II (3)
- WLC102R - INTRO FOREIGN LANG II:RUSSIAN (3)
- WLC102S - INTRO FOREIGN LANG II:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 201

- WLC201A - INTERM FOREIGN LANG I: ARABIC (3)
- WLC201F - INTERM FOREIGN LANG:FRENCH (3)
- WLC201G - INTERM FOREIGN LANG:GERMAN (3)
- WLC201J - INTERM FOREIGN LANG: JAPANESE (3)
- WLC201R - INTERM FOREIGN LANG:RUSSIAN (3)
- WLC201S - INTERM FOREIGN LANG:SPANISH (3)

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Area II: Humanities and Fine Arts - WLC 202

- WLC202A - INTERM FOREIGN LANG II: ARABIC (3)
- WLC202F - INTERM FOREIGN LANG II:FRENCH (3)
- WLC202G - INTERM FOREIGN LANG II:GERMAN (3)
- WLC202J - INTERM FORGN LANG II:JAPANESE (3)
- WLC202R - INTERM FOREIGN LANG II:RUSSIAN (3)
- WLC202S - INTERM FOREIGN LANG II:SPANISH (3)

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Area III: Mathematics and Sciences - Sciences

- AST100 - SURVEY OF ASTRONOMY (4)
- AST106 - EXPLORING THE COSMOS I (4)
- AST107 - EXPLORING THE COSMOS II (4)
- BYS109 - FUNDAMENTALS OF BIOLOGY (4)
- BYS119 - PRINCIPLES OF BIOLOGY (3)
- BYS120 - ORGANISMAL BIOLOGY (3)
- BYS121 - PRINCIPLES OF BIOLOGY LAB (1)
- BYS122 - ORGANISMAL BIOLOGY LAB (1)
- BYS215 - HUMAN ANATOMY & PHYSIOLOGY I (4)
- CH101 - INTRO TO CHEMISTRY (3)
- CH105 - INTRO CHEMISTRY LAB (1)
- CH121 - GENERAL CHEMISTRY I (3)
- CH121M - GENERAL CHEMISTRY I M (3)
- CH123 - GENERAL CHEMISTRY II (3)
- CH125 - GENERAL CHEMISTRY LAB I (1)
- CH126 - GENERAL CHEMISTRY LAB II (1)
- CH151 - GENERAL, ORGANIC, BIOCHEMISTRY (3)
- PH100 - CONCEPTUAL PHYSICS (4)
- PH101 - GENERAL PHYSICS I (4)
- PH102 - GENERAL PHYSICS II (4)
- PH111 - GEN PHYSICS W/CALCULUS I (3)
- PH112 - GEN PHYSICS W/CALC II (3)
- PH113 - GEN PHYSICS W/CALC III (3)

- PH114 - GENERAL PHYSICS LAB I (1)
- PH115 - GENERAL PHYSICS LAB II (1)
- PH116 - GENERAL PHYSICS LAB III (1)
- AES103 - ENVIRONMENTAL EARTH SCIENCE (4)
- AES104 - WEATHER & CLIMATE CHANGE (4)

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Area III: Mathematics and Sciences - Mathematics

- MA105 - NATURE OF MATHEMATICS (3)
- MA107 - ALGEBRA WITH APPLICATIONS (3)
- MA110 - FINITE MATHEMATICS (3)
- MA112 - PRECALCULUS ALGEBRA (3)
- MA112S - PRECALCULUS ALGEBRA S-SECTION (3)
- MA113 - PRECALCULUS TRIGONOMETRY (3)
- MA120 - MATH PROFESSIONAL APPLICATIONS (3)
- MA171 - CALCULUS I (4)
- MA181 - INTRODUCTION TO STATISTICS (3)
- MA150 - CALCULUS I WITH FOUNDATIONS A (3)
- MA151 - CALCULUS I WITH FOUNDATIONS B (3)

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Area IV - History, Social and Behavioral Sciences - SBS

- AES105 - WORLD REGIONAL GEOGRAPHY (3)
- AES110 - PRINCIPLES OF HUMAN GEOGRAPHY (3)
- GS200 - GLOBAL SYSTEMS AND CULTURES (3)
- PSC101 - INTRO TO AMERICAN GOVERNMENT (3)
- PSC102 - INTRO TO COMPARATIVE POLITICS (3)
- PSC260 - INTRO INTERNTL RELATIONS (3)
- PY101 - GENERAL PSYCHOLOGY I (3)
- PY201 - LIFE-SPAN DEVELOPMENT (3)
- SOC100 - INTRO TO SOCIOLOGY (3)
- SOC103 - INTRO TO CRIMINOLOGY (3)
- ECN142 - PRINC OF MACROECONOMICS (3)
- ECN143 - PRINC OF MICROECONOMICS (3)

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Area IV: History, Social and Behavioral Sciences -US

- HY221 - UNITED STATES TO 1877 (3)
- HY222 - UNITED STATES SINCE 1877 (3)

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Area IV: History, Social and Behavioral Sciences - World

- HY103 - WORLD HISTORY TO 1500 (3)
- HY104 - WORLD HISTORY SINCE 1500 (3)

## **Interdisciplinary Cognate (Minor)**

### **Program Description**

The cognate studies option must be formed from two or more closely aligned disciplines and must be comprised of at least 21 semester hours with at least 12 semester hours at the 300-level or above.

### **Number of Credit Hours**

21

## **Honors College**

## **Honors Certificate**

### **Program Description**

#### Honors Certificate Requirements

Students who want to participate in the Honors College but who may not be able to complete the entire 24 honors credit hour requirement have the choice to pursue the Honors Certificate of Completion of Upper-Level Requirements. Please talk to the Honors College Office first; you may still be able to complete the full Honors Diploma. Requirements for the Certificate are as follows:

- 12-23 semester hours of Honors courses
- Satisfactory completion of the Honors Capstone Project or Thesis
- An overall 3.25 GPA at graduation

For more information on Honors courses, see the Honors College Handbook.

### **Number of Credit Hours**

12

### **Degree Requirements**

- Complete all of the following
  - 3 hours from the following:  
Honors Capstone Thesis/Project Course (must be 300/400 Level)
  - 6 hours from the following:  
Honors Courses at 300/400 Level  
Remaining Honors Courses
  - Complete all of the following
    - 3 hours from the following:  
from the following categories:
    - Honors sections of regular courses (ex: PHL 101)
    - Specially designed courses just for Honors (ex: MAE 345)
    - Honors lab sections including lecture credit (ex: BYS 119/BYS 121)
    - Honors Special Seminars, Contracts, or Internships
    - Graduate courses (JUMP)
    - Study Abroad courses

## **Honors Diploma**

### **Program Description**

#### Honors Diploma Requirements

First-time Freshmen pursue the Honors Diploma. Students admitted after their first semester may pursue the Honors Diploma or the Honors Certificate depending on their specific situation. Reach out to Honors Advising for more information.

The following summarizes the requirements for receiving the Honors Diploma. For college-specific information, refer to the Honors Advising webpage or the Honors Student Handbook at [uah.edu/honors](http://uah.edu/honors).

- 24 or more semester hours of Honors course credit, including satisfactory completion of the Honors Capstone Project or Thesis.
- Maintain an overall GPA of 3.25

For more information on the different types of Honors courses, visit the Honors College Courses page. Current semester offerings are available on the Honors Sections page.

### **Number of Credit Hours**

24

### **Degree Requirements**

- Complete all of the following
  - Complete
    - EH105 - HONORS ENGLISH SEMINAR (3)
    - HON101 - INTRO TO HONORS RESEARCH (1)
  - 3 Hours Honors Capstone Thesis/Project Course (must be 300+ or 400+ Level)
  - 6 Hours Honors 300+ or 400+ Courses
  - Complete all of the following
    - 11 hours from the following:
      - Pre-existing Honors sections of regular courses (ex: PHL 101)
      - Regular courses Honorized with an Honors Contract
      - Honors lab and supplement sections that Honorize both lab and lecture credit (ex: BYS 119/BYS 121, ISE 321/HON 321)
      - Pre-existing courses made just for Honors (ex: MAE 345)
      - Honors Special Seminars (HON 201, HON 301)
      - Graduate courses (taken through JUMP)
      - Study abroad courses
      - Internships (Honorized with HON 400)

# Policies

## Academic Program Policies

### Cooperative Education and Internships

Cooperative Education and Internships provide a unique, structured educational experience that allows students to gain practical, professional work experience while completing degree requirements. Through the integration of classroom theory and professional practices, students increase their understanding of the work world.

The Cooperative Education program offers alternating and parallel options. Students working on an alternating schedule rotate semesters of full-time study with semesters of full-time work in their majors. Some students may complete continuous parallel (part-time work) assignments concurrently with a reduced class load. Cooperative Education work experiences are progressive in responsibilities, monitored by the University, and directly related to the student's academic and career goals. Students participating in Cooperative Education are required to register their Cooperative Education through the Career Services office.

Internships are one semester, degree-related employment opportunities where students work one-on-one with professionals to gain practical experience in their field. Several academic programs on campus offer credit for internships; students should check with their academic advisor to learn about any credit-bearing internship opportunities within their program of study.

Career Services

Student Services Building, Room 205

256.824.6741

[chargerjobs@uah.edu](mailto:chargerjobs@uah.edu)

[www.uah.edu/career-services](http://www.uah.edu/career-services)

### Course Placement and Testing

All students who are beginning college-level course work in **English, Mathematics, World Languages and Cultures**, and **Chemistry** are placed at the level best suited to their academic preparation and background. Initial placements are determined by a combination of factors depending on the subject area.

English Placement

Placement in College Writing is based on your ACT English or SAT Evidence-based Reading & Writing scores, high school GPA, and/or diagnostic essay evaluation. Students admitted with no test scores will be required to take a concurrent lab, EH 101L, with their EH 101 course. Students who wish to appeal their placement for College Writing may do so through the placement exam or placement survey requests. More information about placement appeals can be found [here](#).

UAH Placement Level	ACT English Score	Redesigned SAT Evidence-based Reading & Writing Score	Course Options for Placement Level
0000	19 or lower	26 or higher	EH 101 and EH 102 sequence, with concurrent lab (EH 101L) for the first semester
0101	20 or higher	300 or higher	EH 101 and EH 102 sequence
0103	26 or higher	1240 or higher (SAT composite)	EH 103

Math Placement

ACT scores, AP Calculus exam scores, and/or previous college level mathematics courses (which have been accepted by the Math Department for transfer credit) determine placement in Mathematics. Students who have no means of math placement can take the Mathematics Placement Test. See [here](#) for online test registration. This test may be taken twice.

UAH Placement Level	ACT Math Score	Redesigned SAT Math Score	UAH Placement Exam Score	Course Options for Placement Level*
0000 (Level 0)	21 or lower	490 or lower	< 40%	MA 107S, MA 110S, MA 112S
1000 (Level 1)	22-24	500-590	40% - 59%	MA 107, MA 110, MA 112
2000 (Level 2)	25-27	600-630	60% - 79%	MA 113, MA 115, MA 120, MA 171S
3000 (Level 3)	28 or higher	640-800	80% or higher	MA 171

Please note that the equivalent mathematics course is the course that the student must enroll in based upon placement.

*\* Class choice determined by major; please consult with your academic advisor*

#### Chemistry Placement

ACT Math scores determine placement in Chemistry.

UAH CH Placement Level	UAH Math Placement Level	ACT Math Score	Redesigned SAT Math Score	Course Options for Placement Level
0000	0000 (Level 0)	19 or lower	480 or lower	N/A
0101	1000 (Level 1)	20-24	500-590	CH 101 and CH 105
0121	2000-3000 (Level 2 or 3)	25-36	600-800	CH 121 and CH 125

#### World Languages and Cultures Placement

Students with prior knowledge of French, German, or Spanish may demonstrate competence at an advanced level in five ways:

1. performance on a computer-based placement test,
2. high school coursework,
3. CLEP examination,
4. AP examination, or
5. native language experience.

Information about WLC Placement can be found [here](#).

If students have not received initial course placements before enrollment, they should contact the Office of Admissions.

## Credit, Advanced Placement (AP)

#### Advanced Placement Program

Several UAH departments award credit to undergraduate students who have earned designated scores on Advanced Placement (AP) Program examinations of the College Entrance Examination Board. AP examinations are usually taken at the end of an AP-designed course of study in high school.

If awarded, credit will be recorded without grades or quality points and will not, therefore, be included in the calculation of the grade point average. Official scores may be requested from collegeboard.org. UAH AP code: 1854. Scores presented on transcripts from other institutions cannot be evaluated.

Listed below are UAH courses in which a student may receive AP credit, along with specific AP exam titles and minimum score requirements.

AP Exam	Exam Score	Credit	UAH Course Equivalent
Art History	3	3	ARH 100
	4-5	6	ARH 100 and 101
Art Studio --Drawing	4-5	3	Dept. Review--ARS 160
	4-5	3	Dept. Review--ARS 123
--2-D			



Biology	3	4	BYS 119 and 121
	4-5	8	BYS 119, 120, 121, and 122
Calculus AB	3-5	4	MA 171
Calculus BC	3	4	MA 171
	4-5	8	MA 171 and 172
Chemistry	3	4	CH 101 and 105
	4	4	CH 121 and 125
	5	8	CH 121, 123, 125, and 126
Computer Science A*	3-5	3	CS 103
	4-5	3	EGR 101
Computer Science Principles	4-5	3	CS 102
English Language or Literature Composition	3	3	EH 101
	4**	3	EH 101
	5	6	EH 101 and 102
Environmental Science	3-5	4	AES 103
European History	3	3	HY 103
	4-5	6	HY 103 and 104
Foreign Language	3	6	WLC 101 and 102
	4	9	WLC 101, 102, and 201
	5	12	WLC 101, 102, 201, and 202
US Government and Politics	3-5	3	PSC 101
Comparative Government & Politics	3-5	3	PSC 102
Human Geography	3-5	3	AES 110
Macroeconomics	3-5	3	ECN 142
Microeconomics	3-5	3	ECN 143
Music Theory	3-5	4	MU 201 and 203
Physics 1	3-5	4	PH 101
Physics 2	3-5	4	PH 102
Physics C-Mechanics	3-5	4	PH 111 and 114
Physics C-Electricity & Magnetism	3-5	4	PH 112 and 115
Psychology	3-5	3	PY 101
Research	5 (with score of 3+ in Seminar)	6	EH 101 and 102
Seminar	3-5	3	EH 101
Statistics	3-5	3	MA/ST 281
US History	3	3	HY 221
	4-5	6	HY 221 and 222
World History	3	3	HY 103
	4-5	6	HY 103 and 104

\*Student may receive credit for either EGR or CS course--but not for both

\*\*Student who scores 4 on both English Language and Literature exams will receive credit for EH 101 and 102

## Credit By Examination

UAH recognizes credit by examination and credit for several types of out-of-class experiences. Credit hours earned by examination and/or out-of-class experiences are not considered UAH institutional coursework and, therefore, may not be applied towards fulfillment of:

- the minimum 50% of the coursework required to earn a bachelor's degree must be earned at a bachelor's degree granting institution (four-year college or university)
- the minimum of 25% of the coursework required for the degree must be earned in residence at The University of Alabama in Huntsville

There are four alternatives by which a student may gain credit through examination at UAH:

1. departmental examinations,
2. the Advanced Placement (AP) program,
3. the College Level Examination Program (CLEP), or
4. International Baccalaureate (IB).

Credit by examination is not granted in the following cases:

1. if a student has been enrolled in a comparable course for more than three weeks,
2. to remove a failure already recorded for a course, or
3. to satisfy the residency requirement for graduation.

## Credit, College Level Examination Program (CLEP)

The College Level Examination Program (CLEP) is a national program under which a student can receive credit for college level achievement. Anyone who has practical knowledge in an area through independent study, work experience, cultural exposure, or intensive reading may take these tests. The policy for CLEP credit varies with each institution. The policies listed herein are those of UAH. See [www.uah.edu/testing](http://www.uah.edu/testing) for test dates, fees, and registration.

Credit by CLEP examination is allowed if the appropriate academic department has approved the CLEP test for use by the University. Credit awarded for CLEP examinations will be recorded on the student's record without grades or quality points and will not, therefore, be included in the calculation of the grade point average. If a student does not pass a CLEP test, no record is placed on their transcript. Examinations may be retaken six months after initial testing.

Students should check with their program of study and their academic advisor to determine which, if any, CLEP examinations they may take to satisfy either free elective or degree requirements.

Listed below are UAH courses in which a student may receive CLEP credit, along with specific CLEP test titles and minimum score requirements.

CLEP Exam	Minimum Exam Score	Credit	UAH Course Equivalent
<a href="#">College Composition</a>	50	3	EH 101
	65	6	EH 101 and 102
<a href="#">College Composition Modular</a>	50 and passing performance on English Department Essay (contact <a href="mailto:english@uah.edu">english@uah.edu</a> )	3	EH 101
	65 and passing performance on English Department Essay (contact <a href="mailto:english@uah.edu">english@uah.edu</a> )	6	EH 101 and 102
Chemistry	48 (recommended student take the Chemistry Placement Test first)	8	CH 121, CH 123, CH 125, and CH 126
Calculus	50	3	MA 171
French Language: Levels 1 and 2	48	3	WLC 101F
	50	6	WLC 101F and 102F
German Language: 1 and 2	48	3	WLC 101G
	50	6	WLC 101G and WLC 102G
Spanish Language: Levels 1 and 2	48	3	WLC 101S
	50	6	WLC 101S and WLC 102S
Humanities			
History of the United States I: Early Colonization to 1877	60	3	HY 221
History of the United States II: 1865 to the Present	60	3	HY 222
Introductory Sociology	50	3	SOC 100
American Government	50 and passing performance on Political Science Department essay (contact <a href="mailto:cahs@uah.edu">cahs@uah.edu</a> )	3	PSC 101
Introductory Psychology	54	3	PY 101
Financial Accounting	65	3	ACC 211
Principles of Macroeconomics	50	3	ECN 142
Principles of Microeconomics	50	3	ECN 143
Biology	53	3	BYS 109
Natural Sciences	53	3	BYS 109

### Credit, Department Exam

Departmental examinations for credit in specific courses may be given by a department upon application by the

student and with the approval of the Department Chair. Students may apply for such a test if they have taken college-level work in secondary school, in a non-collegiate class or on a tutorial basis, or through private study. Credit, if awarded, will be recorded without grades or quality points and will not, therefore, be included in the calculation of the grade point average. The amount of credit allowable through departmental examinations is determined by the appropriate academic dean and the department chair concerned.

#### **Fees:**

Administrative: Vary by test and college.

Credit: \$10 per credit hour will be added to the student's account upon successful completion of the exam.

Departments offering credit by examination on tests constructed by the department:

<b>Department</b>	<b>Available Courses</b>
<b><i>College of Arts, Humanities, and Social Sciences</i></b>	
Music	<a href="#">MU 100</a> , <a href="#">MU 201</a> , <a href="#">MU 203</a>
Philosophy	PHL 103, PHL 320
Psychology	PY 300
World Languages and Cultures (only for WLC Major/Minor/Certificate students)*	<a href="#">Listing and resources</a>
<b><i>College of Engineering</i></b>	
Civil Engineering	CE 211, CE 284
Electrical and Computer Engineering	CPE 211
Mechanical and Aerospace Engineering	MAE 211
<b><i>College of Nursing</i></b>	
Nursing	NUR 220, NUR 303
<b><i>College of Science</i></b>	
Computer Science	All CS 100 and 200 level courses

\*If non-WLC Major/Minor/Certificate students are interested in testing out of WLC courses, they should take the CLEP exam.

### **Credit, International Baccalaureate (IB)**

The University of Alabama in Huntsville recognizes International Baccalaureate (IB) credit with a score of 5, 6, or 7 on the higher-level examinations. IB score reports should be sent to the UAH Office of Admissions for evaluation. Additional credit may be awarded on a course-by-course basis as approved by the department. Some departments may award credit based on the subsidiary examinations.

The academic unit responsible for the student's program of study will determine the application of credits toward specific degree requirements. If awarded, credits will be recorded without grades or quality points and will not, therefore, be included in the calculation of grade point average.

Listed below are UAH courses in which a student may receive AP credit, along with specific AP exam titles and minimum score requirements.

<b>International Baccalaureate Course</b>	<b>Higher Level Exam Score</b>	<b>Credit</b>	<b>UAH Course Equivalent</b>
Anthropology	5-7	3	
Art History	5-7	6	ARH 100 and ARH 101
Art Studio	5-7	6	Dept. Review--  ARS 123 and ARS 140  OR  ARS 160 and ARS 260
Biology	5-7	8	BYS 119 and BYS 120
Chemistry	5-6	4	CH 101 and CH 105
	7	8	CH 101, CH 105, CH 201, and CH 205
Computer Science	5-7	3	
Economics	5-6	3	ECN 142
	7	6	ECN 142 and ECN 143
English	5-6	3	EH 101
	7	6	EH 101 and EH 102
Geography	5-7	3	AES 110
US History	5-7	6	HY 221 and HY 222
World History	5-7	6	HY 103 and HY 104
Languages: French, German, Spanish**	5-7	12	WLC 101F, WLC 101G, WLC 101S, WLC 102F, WLC 102G, WLC 102S, WLC 201F, WLC 201G, WLC 201S, WLC 202F, WLC 202G, WLC 202S
Mathematics**	5-6	4	MA 171
	7	8	MA 171 and 172
Music	5-7	3	MU 100
Philosophy	5-7	3	PHL 101
Physics	5-7	8	PH 101 and PH 102
Psychology	5-7	6	PY 101 and PY 102
Theater Arts	5-7	3	TH 122

*\*Student may receive credit for either standard-level or higher-level exams*

## **Joint Undergraduate Masters Program (JUMP)**

UAH's JUMP program (Joint Undergraduate Master's Program) encourages exceptional undergraduate students to continue their education into UAH master's degree programs. By entering JUMP as undergraduates, students will have shorter total degree completion times and will reduce their costs of obtaining master's degrees (M.S. or M.A.).

Visit [uah.edu/jump](http://uah.edu/jump) to view a current listing of all JUMP-eligible programs.

### **Benefits for the Student**

- There is no entrance exam.
- Undergraduate courses can be double-counted towards a graduate degree.
- Graduate courses taken as a JUMP student are charged at the undergraduate tuition rate.
- There is no Graduate School application fee.

### **JUMP Definitions**

JUMP Pathway: An approved combination of undergraduate and graduate degree programs.

JUMP Course: A course taken after admission to a JUMP pathway that counts towards both the undergraduate and graduate degrees in the pathway.

JUMP Launch Advisor: The person who certifies that a JUMP course count toward the undergraduate degree in the JUMP pathway.

JUMP Landing Advisor: The person who certifies that a JUMP course counts toward the graduate degree in the JUMP pathway.

#### Admission to JUMP

UAH undergraduates qualify for JUMP once they have earned 75 or more undergraduate hours. Typically, this means that a student applies to the JUMP program in the semester in which they earn their 75th undergraduate hour.

Successful JUMP applicants must meet the GPA requirements in a defined JUMP Pathway.

- Most Pathways require a minimum undergraduate GPA of 3.500 (including all transfer coursework).
- For the RN-BSN Nursing JUMP programs, which have more than 150 combined bachelor's-master's credit hours, the minimum GPA (determined from the 75th percentile GPA of students admitted to the RN-BSN program) is 3.300.

Students should contact the JUMP Launch Advisor of their academic program for more information about admission requirements and how to submit the JUMP application. View more information at [uah.edu/jump](http://uah.edu/jump).

#### Completing the Undergraduate Degree

- JUMP Pathways allow students to double-count as many as 12\* graduate credit hours (based on pathway requirements) to both their undergraduate and graduate programs. \*Some Pathways allow fewer than 12 credit hours.
- JUMP courses must be approved by both the student's JUMP Launch Advisor and JUMP Landing Advisor as part of the JUMP Application approval process. Changes may be submitted prior to graduation via an approved JUMP Course Change form that is also approved by both JUMP Advisors before the new course(s) is taken.
- Thesis courses cannot count as JUMP courses.
- Students must earn a grade of B or higher in a JUMP course to earn graduate credit.
- Students are considered to be undergraduate students until they have completed the double-counted courses and earn their bachelor's degree.
- JUMP students are not allowed to hold assistantships, graduate scholarships, or graduate fellowships until their undergraduate degrees have been completed.

#### Completing the Graduate Degree

- Students are admitted into their pathway graduate program upon earning their bachelor's degree, successfully completing their JUMP courses, and signing a letter accepting their status as a graduate student. This letter is sent to them by UAH Graduate Admissions when they have completed all undergraduate requirements.
- Graduate program may require additional application materials.
- All coursework must be completed within six years of taking the first JUMP course.
- Students who do not complete their coursework within the defined time period or who do not meet any other pre-specified JUMP admissions criteria will have to apply to the graduate program through the normal admissions process. The JUMP graduate courses taken as an undergraduate will not count towards the graduate degree.

#### Summary of JUMP Requirements

- Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
- Students must maintain a minimum overall GPA throughout the JUMP program until graduation. GPA

requirements vary by academic program.

- All coursework must be completed within six years of taking the first JUMP class.
- Once all undergraduate degree requirements have been met, students apply to their graduate program through a simplified application process.
- If a change is made to the initial JUMP application, both a JUMP change form and a change to the student's undergraduate Program of Study (POS) must be submitted for approval to the student's JUMP Launch and Landing Advisors.
- Students cannot hold a graduate assistantship, graduate scholarship, or graduate fellowship until the undergraduate degree is completed.

Academic JUMP program and pathway requirements may be more stringent than those described here. More information is available at <http://uah.edu/jump>.

## Study Abroad

The Office of Study Abroad, within the Office of International Services, serves as the coordinating office for study abroad opportunities at UAH.

### Faculty-Led Courses

Each year, UAH offers a number of faculty-led study abroad courses typically ranging from two to four weeks in length and conferring three to six academic credit hours in the course(s) offered.

### Summer, Semester, and Academic-Year Programs

UAH works with international partners and education abroad organizations to offer students summer, semester, or academic-year study abroad programs at sites in Africa, Asia, Australia, and Europe. Students may participate in these programs and earn academic credit toward their degrees at UAH. Programs are with affiliate partners or exchange agreement partners.

### Internship, Research, and Service Abroad Opportunities

Students may consult with the Office of Study Abroad about interning, researching, and completing service projects abroad. Please note that many of these opportunities have specific application procedures and may be competitive in the selection process.

To learn more about specific countries and programs, please visit the [Study Abroad programs page](#) for more information or by emailing [studyabroad@uah.edu](mailto:studyabroad@uah.edu).

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The Office of Study Abroad is located in the Student Services Building, Room 218.

## Academic Standards

### Academic Achievement

#### President's List

An undergraduate student in good standing earning 12 or more hours in a semester with a GPA of 4.00 is distinguished by being identified on the president's list.

#### Dean's List

An undergraduate student in good standing earning 12 or more hours in a semester with a GPA of 3.50-3.99 is distinguished by being identified on the dean's list.

#### Scholar

An undergraduate student in good standing earning 12 or more hours in a semester with a GPA of 3.00-3.49 will be designated as a scholar.

The University faculty recognizes and honors those students who have attained academic excellence at a convocation held in the spring of each year. At the Honors Convocation, students who have been inducted into the honor societies, been named to the dean's list in each college, and have attained excellence in academic

programs are recognized.

Changes to standing can be reviewed up to two weeks after grades are posted to a student's transcript.

## **Academic Appeals Process**

A student may file an academic appeal regarding an action taken by University personnel, including instructional personnel, administrators, or staff members at the University, that affects the student's academic standing. Examples of academic appeals include, but are not limited to, allegations of unfairness in grading, an alleged violation of a written or oral agreement with a student (e.g., course requirements for graduation), and alleged inconsistent applications of existing policies. Appeals related to course grades must be filed within 30 days of the end of the semester/term in which the grade was earned. Students wishing to file an appeal must follow the Academic Appeals policy at [https://www.uah.edu/images/administrative/policies/02.01.12-AA\\_Academic\\_Appeals\\_Policy.pdf](https://www.uah.edu/images/administrative/policies/02.01.12-AA_Academic_Appeals_Policy.pdf).

## **Academic Responsibility**

### **Undergraduate Students**

Undergraduate students at the University of Alabama in Huntsville have the following academic responsibilities:

1. To enroll in only those courses for which the stated prerequisite(s) (if there are any) has/have been satisfactorily completed. Failure to comply with this procedure may result in administrative withdrawal.
2. To attend all meetings of each class in which they are enrolled. Instructors will announce at the beginning of the semester if they consider attendance in computing final grades.
3. To observe all regulations of their college and select courses according to the requirements of that college.
4. To consult their advisors on all matters pertaining to their academic careers, including changes in their programs.
5. To answer promptly all written notices from advisors, faculty, deans, and other University officers.
6. To maintain the integrity of the classroom by practicing academic honesty. Students should refer to the student handbook for details regarding academic dishonesty.
7. To file an "Application for Degree" in the Registrar's Office by the published deadline.
8. To be personally responsible for fulfilling all requirements for graduation and observing all regulations at UAH.

### **Academic Honesty**

Plagiarism and other forms of cheating are subject to penalties as outlined in the [Student Handbook](#).

### **Graduate Students**

Graduate students at The University of Alabama in Huntsville have the following academic responsibilities:

1. To enroll in only those courses for which the stated prerequisite(s) (if any) have been satisfactorily completed. Failure to comply with this procedure may result in administrative withdrawal;
2. To attend all meetings of each class in which they are enrolled. Instructors will announce at the beginning of the semester if they consider attendance in computing final grades;
3. To observe all regulations of their college and select courses according to the requirements of that college;
4. To consult their advisors on all matters pertaining to their academic careers, including changes in their programs;
5. To answer promptly all written notices from advisors, faculty, deans, and other university officers;
6. To maintain the integrity of the classroom by practicing academic honesty. Students should refer to the Graduate Student Handbook for details regarding academic misconduct;
7. To file an "Application for Advanced Degree" or "Application for Graduate Certificate," as appropriate, through the Registrar's Office at least 3 months before the expected date of completion of requirements;
8. To be personally responsible for fulfilling all requirements for graduation and observing all regulations at UAH.

### **Academic Honesty**

Plagiarism and other forms of cheating are subject to penalties as outlined in the [Academic Misconduct Policy \(02.01.67\)](#).

## **Academic Warning, Probation, and Dismissal/Suspension**



## Undergraduate Students Academic Warning, Probation, and Dismissal/Suspension

In order to be in good academic standing, students must maintain a GPA above the Academic Action Threshold (AAT), which varies according to classification. For freshmen and sophomore students, the AAT is 1.9; for juniors and above, the AAT is 2.0. A student whose semester GPA at UAH falls below the applicable AAT will be placed on academic warning, probation, or dismissal.

### Academic Warning

Students are subject to academic warning if they are in good standing and earn less than the applicable AAT for the semester; or if they earn the applicable AAT or greater for the semester, but the UAH cumulative is less than the applicable AAT.

### Probation

Students are subject to academic probation if they are on academic warning and the current semester GPA is less than the applicable AAT, and the UAH cumulative is less than the applicable AAT.

### Dismissal/Suspension

Students are subject to academic dismissal if they are on academic probation and the current semester GPA is less than the applicable AAT, and the UAH cumulative is less than the applicable AAT.

A regularly admitted student dismissed for the first time is automatically eligible to re-enter after being out of school one term. A student admitted in any special category and dismissed for the first time must petition the Admissions Committee for permission to re-enter after an absence of at least one term. A student dismissed for the second time is considered suspended and disqualified for readmission. After a period of one year, such student may petition for re-admission. Individual colleges may have additional requirements specific to their programs. Refer to college sections.

### Conditional/Probational to Regular Status

Students admitted conditionally or on probation will be evaluated for regular student status after completion of at least 15 semester hours at UAH. If the student at that time has earned a 2.00 on all UAH coursework, the Conditional/Probational classification will be changed to regular student status. The deadlines to submit a petition for readmission to the Registrar's Office (SSB 120) are July 1 for Fall, November 15 for Spring, and April 1 for Summer readmission.

### Graduate Students Academic Probationary Status

Any time a student's overall graduate GPA drops below a 3.000, the student will be placed on Academic Probationary Status (APS). A student on APS is not a candidate for a degree and may not schedule a masters or doctoral defense.

A student can remove APS by raising their overall graduate GPA to a 3.000 or greater within the 12 hours attempted immediately following the semester in which they are placed on APS. These 12 hours (which do not include withdrawals and/or incompletes) must be attempted within the next three consecutive Fall and Spring semesters, or within one year if courses are also attempted during Summer. This timeline can be extended only by having an appeal approved by the Graduate Dean.

Conditional admission is a form of APS. Conditionally admitted students must maintain a 3.000 average through the semester in which the first 12 semester hours are completed.

### Academic Dismissal and Appeal

Failure to remove APS as described above shall result in dismissal from the Graduate School.

A student may also be dismissed for failing attempted thesis, dissertation, or DNP credit courses. If a student receives more than one grade of "Unsatisfactory" in a 699- or a 799-level course, they will be dismissed from the graduate program.

Students who have been academically dismissed may, with the support of their advisor and department chair or program director, file an appeal with the graduate dean to be allowed to continue in the graduate program. The student must submit a written, signed appeal indicating the reason for their poor academic performance along with a plan for raising the overall graduate GPA to at least a 3.000 within a specified timeframe. The graduate dean may stipulate additional or different conditions to the plan. The appeal must be submitted by the following deadlines for readmission: July 1 for Fall, November 15 for Spring, and April 1 for Summer.

If the appeal is approved, the student shall be readmitted on APS, with the probation duration documented as one of the readmission conditions. These conditions shall be documented in a readmission letter signed by the student's advisor, the student's major department chair or program director, and the graduate dean. The student shall indicate acceptance of these conditions by signing the readmission letter. A student failing to comply with readmission conditions will be academically dismissed.

A student may also be dismissed for reasons related to student misconduct, as per the UAH Code of Student Conduct and the Academic Misconduct Policy. Information about student misconduct is located on the [UAH Code of Student Conduct](#) webpage and the [UAH Academic Misconduct Policy](#) webpage.

Graduate students who have been dismissed must sit out for a minimum of two years before they can re-apply to any UAH graduate program.

## **Grade Point Average**

The grade point average (GPA) is computed by dividing the total number of quality points earned at UAH by the total number of semester hours attempted at UAH (transfer grades are not included). Courses in which a grade of NC, W, P, S, X or AU is assigned are not included.

## **Admissions**

### **Academic Common Market**

The Academic Common Market (ACM) is an association of 15 states (AL, AR, DE, FL, GA, KY, LA, MD, MS, OK, SC, TN, TX, VA, and WV) formed to permit out-of-state undergraduate students to major in selected programs at participating institutions while paying in-state tuition rates. Each ACM state outside of Alabama typically allows its residents to participate in the University's programs through ACM.

When it has been determined that UAH offers the desired program through the Academic Common Market, applicants should initiate application procedures by contacting their home state's Commission on Higher Education (or the equivalent office) and requesting permission to pursue the desired program at UAH. Additional information and a listing of contacts by state may be obtained from the Southern Regional Education Board's website (<http://www.SREB.org>). Under the heading "Programs and Services," select Academic Common Market.

### **Admission Appeals**

A student may file an appeal only if they have officially been denied admission to the University.

After an official denial has been issued, the student may submit a written request to the [Director of Admissions](#) requesting that their application be reevaluated.

In order to move forward with an appeal, the student must submit a written statement outlining any information that is pertinent to the appeal, and a letter of recommendation from someone who knows the student from an academic perspective. Additionally, updated transcripts and or test scores can also be submitted for review.

### **Admissions Requirements, Graduate**

The University of Alabama in Huntsville (UAH) welcomes inquiries and applications from interested persons who wish to further their education. The UAH Graduate School has over 80+ degree and certificate programs in Arts, Humanities & Social Sciences, Business, Education, Engineering, Nursing, and Science. The Graduate Admissions staff is available to assist prospective students in exploring graduate program offerings and in navigating the admissions process. In addition, program coordinators for each graduate program are available to engage with prospective students to discuss their enrollment plans and opportunities at UAH.

To find contact information for the program coordinator for your academic program of interest, please visit the [graduate program listing page](#). General admissions application questions can be emailed to [gradadmissions@uah.edu](mailto:gradadmissions@uah.edu). Further information about graduate admission requirements and the application process is available on the [graduate admissions website](#).

### **Unconditional Admission**

To qualify for unconditional admission to the UAH Graduate School, applicants must hold a bachelor's degree, or equivalent, from an approved institution and have a minimum grade-point average of a 3.000 on their

undergraduate record. Individual academic programs may have higher GPA requirements for unconditional admission. Although there is no university-level admission test score requirement (e.g., GRE, GMAT or MAT), individual academic programs may require a minimum admissions test score for unconditional admission. View more information about individual program test score requirements on the Graduate Admissions Test Score Requirements [webpage](#).

Meeting the above unconditional admission requirements does not automatically ensure a student acceptance to an academic program. Applicants should consult their academic program for specific additional admission requirements. Departments may require applicants to fulfill specific coursework or pre-requisite requirements for full acceptance into the academic program. International applicants should also visit the International Student [catalog page](#) to review additional requirements.

### **Conditional Admission**

The Graduate School may conditionally admit domestic applicants who do not satisfy all of the requirements for unconditional admission, but who do show reasonable potential for doing graduate work. Conditional admission requires the approval of the chair of the department in which the applicant plans to pursue an advanced degree. International students do not qualify for conditional admission per the current immigration standards set by USCIS.

Conditionally admitted students must make an overall grade average of B (3.000) or better for the first 12 hours of attempted coursework. Students must also complete any other conditions for coursework or other pre-requisites as requested by the department. The student will then assume the status of an unconditionally admitted student. Otherwise, the student is dismissed from the Graduate School. Under exceptional cases, a student may be readmitted upon a justified recommendation of the faculty in the student's major department and approval of the Graduate Dean.

### **Provisional Admission**

A student (other than an individual with non-immigrant visa status) whose application to the Graduate School is not complete or is pending approval, may, with a departmental recommendation, be admitted to UAH on a provisional basis. Students admitted in this category may register for graduate-level courses for one semester with approval from the department(s), provided that all prerequisites for those courses have been met. Students may be admitted provisionally for one semester only. Within that period they must complete their application materials in time to be considered for regular admission prior to the start of the next semester, usually by the 10th week of the semester. Students who do not complete the application process within the allowed period, or are subsequently not admitted to the graduate program, will not be allowed to take additional graduate classes as a degree-seeking student.

Once a student gains regular admission to the Graduate School, all policies regarding conditional or unconditional admission become effective in the provisionally admitted semester. Graduate credit for courses at the 500-level or above taken as a provisional student may, with the approval of the degree department, be applied toward a graduate degree program only if the grades earned in such courses were B or higher.

- Students admitted provisionally are not eligible for Federal financial aid.
- This category is not available to students with non-immigrant visa status.

## **Admissions Requirements, Graduate, College of Business**

1. Apply online. Application instructions can be found at <https://www.uah.edu/admissions/graduate/apply-for-admission>.
2. Transcripts: Send your official transcripts to UAH Graduate Admissions through an electronic delivery service. UAH Graduate Admissions accepts official transcripts from [Parchment](#) and [Student Clearinghouse](#). If your school does not have access to these services, request that your official hard-copy transcripts be sent to:

**UAH Graduate Admissions**  
**301 Sparkman Drive**  
**SSB, Suite 218**  
**Huntsville, AL 35899**

3. Entrance Exam (GMAT/GRE) and Exam Waiver Criteria:

- **GMAT (preferred)**  
Minimum score: 500  
<http://www.mba.com/gmat>
- **GRE (accepted)**  
Minimum score: 300 verbal and quantitative and a 3.0 on analytical writing  
<http://www.taketheGRE.com>  
Institutional code: 1854

Test score waiver criteria for each program can be found at <https://www.uah.edu/admissions/graduate/apply-for-admission/test-score-requirements>.

4. Supplemental Documentation: Submit your resume within your Charger Status account.

#### Graduate Assistantships

A limited number of graduate assistantships are available to select full-time students on a competitive basis. Graduate assistantships are awarded at either a 10 or 20 hour per week service to the College, carry a stipend, and have 4.5-6 semester hours of tuition paid for a part-time assistantship or 9-12 semester hours of tuition paid for a full-time-assistantship. The assistantship application is available [here](#).

Graduate Teaching Assistantships (GTA) are awarded to students who assist with the College's undergraduate teaching mission as tutors, graders, and coordinators of program activities. Graduate Research Assistantships (GRA) are made available through externally funded grants or contracts. GRAs do research under the supervision of a faculty member or center director. Because GRAs assist with specific research activities, the ability of applicants to assist with these specific activities is considered when awarding assistantships.

#### Degree Requirements

The following academic requirements are those of the Graduate School and the College of Business:

1. Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program;
2. No grade lower than a C- may be counted toward a graduate degree;
3. At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above;
4. A grade of B- or better is required in the specified capstone course of the graduate degree.

#### Expectations about Degree Progress

Course Load: The typical semester course load for a full-time graduate student is 9 to 12 semester hours. The typical semester course load for a student employed full-time is 3 to 6 semester hours.

Time Limit: The degree must be earned within 10 years or by the end of the 30th semester. There are three semesters a year; fall, spring, and summer. The time clock starts when the first course is taken (including transfer credit).

## Admissions Requirements, International Students

#### Undergraduate International Students

International students are defined as any applicant who is not a U.S. Citizen or Permanent Resident. International applicants must meet all established requirements for admission from secondary schools or from other colleges and universities. International applicants should apply for admission at least six months in advance of desired attendance date in order to facilitate timely admission and enrollment.

An undergraduate international applicant must submit the following:

1. Completed [undergraduate international application](#) form.
2. Non-refundable application fee of \$50 USD.
3. Official copies of secondary school and college or university transcripts, including English translations, forwarded to The University of Alabama in Huntsville directly from the institution(s) attended or the approved accrediting agency. Personal copies are not accepted. English credits earned at international institutions will be evaluated by the Department of English at UAH after an admission decision is made.

4. Certificate of Foreign Credit Evaluation for all high school or college coursework done outside of the U.S. must be performed by an approved service. The evaluation should contain a document-by-document (high school) and course-by-course (college) description and a grade point average from each institution attended. Applicants have the responsibility to contact the evaluation agency directly and have the evaluation agency send the official evaluation report to UAH - copies will not be accepted by UAH. Examples of acceptable evaluation services are:

International Education Consultants

[www.jsilny.com](http://www.jsilny.com)

[info@jsilny.com](mailto:info@jsilny.com)

World Education Services, Inc.

[www.wes.org](http://www.wes.org)

Lisano International

<http://www.lisano-intl.com/>

SpanTran

<https://spantran.com/web/>

5. Official American College Test (ACT) scores or SAT scores should be sent directly to UAH from the testing service. Please note ACT/SAT scores are not required for international undergraduate applicants. If available, students may submit scores to determine any scholarship eligibility.

6. Proof of English language proficiency. Please refer to the section on English language requirements for nonnative speakers below.

7. Students who will attend UAH in F or J student status are required to submit a certified affidavit of financial support and financial statements/bank records as evidence of sufficient finances to cover university and personal expenses while attending UAH.

Transferring From Another U.S. Institution

Individuals in the U.S. in F or J status who intend to transfer to UAH from a U.S. high school or college will receive, upon admission, a *transfer clearance* form that must be completed by the previous institution's designated official (international student advisor) and sent to the UAH Office of Admissions in order to be eligible for enrollment. It is also the responsibility of the admitted F or J student to communicate with the previous school's international student advisor to ensure that the SEVIS I-20 or DS-2019 record is transferred from the previous school to UAH prior to the start of the semester of enrollment.

English Language Requirements for Nonnative Speakers

All applicants whose native language is not English must demonstrate English language proficiency necessary to succeed in degree programs at UAH as indicated by completing at least one of the following standardized English proficiency exams with the respective minimum score listed below:

TOEFL (iBT): all sub-scores greater than or equal to 18

TOEIC: 600 (listening and reading score only)

Pearson's Test of English: 48

IELTS: 6.0

Duolingo: 105

NOTE THAT OFFICIAL TEST SCORES SHOULD BE SENT DIRECTLY TO UAH FROM THE TOEFL OR IELTS TESTING SERVICE.

\*iBT = internet-based TOEFL; IELTS = International English Language Testing System

Health and Immunization Policies Student Health Insurance

International students are required to purchase the UAH student health insurance and will be assessed the insurance premium each semester upon enrollment in classes.

## Immunizations

Students must meet immunization requirements set by the UAH Student Health Center. More information can be found at <http://www.uah.edu/admissions/undergraduate/apply-for-admission/international>.

## **International Graduate Students** Language Proficiency for Admission

All applicants whose native language is not English must demonstrate English language proficiency necessary to succeed in degree programs at UAH as indicated by completing at least one of the following standardized English proficiency exams with the respective minimum score listed below:

TOEFL iBT: all sub-scores must be greater than or equal to 19

Pearson's Test of English: 54

IELTS: 6.0

Duolingo: 105

\*College and/or departments may require a higher minimum language score for admission.

UAH reserves the right to verify and double-check the applicant's English proficiency when deemed necessary.

Language proficiency is only one factor in admission decisions. To confirm the full admission requirements for specific degree programs, please refer to the application for your particular degree. An applicant who has earned a bachelor's degree, or higher, from an accredited U.S. institution, will be exempted from providing standardized test results for English language proficiency.

## Nonnative English-speaking Graduate Teaching Assistants

To be considered for positions as teaching assistants or graduate assistants, students must demonstrate at least one of the following minimum standardized English language proficiency test scores:

TOEFL iBT: no sub-score below 22

TOEFL Essentials: no sub-score below 9.5

IELTS: no sub-score below 6.5

## Supplemental Application Documents

Documents required for an application will vary depending on the program selected and will be identified within the application portal. Unofficial transcripts may be considered during the admission process, but official transcripts must be received before a student can register for classes. International students will need to submit proof of financial support before immigration form I-20 can be issued.

Please review the [catalog admissions page](#) for additional information regarding required documents.

*Priority admittance will be given to international students who have applied and submitted all required documents by:*

Spring: October 1

Summer: February 1

Fall: May 1

## **Admissions Requirements, Joint Undergraduate Masters Program (JUMP)**

UAH's JUMP program (Joint Undergraduate Master's Program) encourages exceptional undergraduate students to continue their education into UAH master's degree programs. By entering JUMP as undergraduates, students will have shorter total degree completion times and will reduce their costs of obtaining master's degrees (M.S. or M.A.).

Visit [uah.edu/jump](http://uah.edu/jump) to view a current listing of all JUMP-eligible programs.

## Benefits for the Student

- There is no entrance exam.
- Undergraduate courses can be double-counted towards a graduate degree.
- Graduate courses taken as a JUMP student are charged at the undergraduate tuition rate.
- There is no Graduate School application fee.

## JUMP Definitions

**JUMP Pathway:** An approved combination of undergraduate and graduate degree programs.

**JUMP Course:** A course taken after admission to a JUMP pathway that counts towards both the undergraduate and graduate degrees in the pathway.

**JUMP Launch Advisor:** The person who certifies that a JUMP course count toward the undergraduate degree in the JUMP pathway.

**JUMP Landing Advisor:** The person who certifies that a JUMP course counts toward the graduate degree in the JUMP pathway.

## Admission to JUMP

UAH undergraduates qualify for JUMP once they have earned 75 or more undergraduate hours. Typically, this means that a student applies to the JUMP program in the semester in which they earn their 75th undergraduate hour.

Successful JUMP applicants must meet the GPA requirements in a defined JUMP Pathway.

- Most Pathways require a minimum undergraduate GPA of 3.500 (including all transfer coursework).
- For the RN-BSN Nursing JUMP programs, which have more than 150 combined bachelor's-master's credit hours, the minimum GPA (determined from the 75th percentile GPA of students admitted to the RN-BSN program) is 3.300.

Students should contact the JUMP Launch Advisor of their academic program for more information about admission requirements and how to submit the JUMP application. View more information at [uah.edu/jump](http://uah.edu/jump).

## Summary of JUMP Requirements

- Students must receive at least a B in each JUMP course for it to count towards a graduate degree.
- Students must maintain a minimum overall GPA throughout the JUMP program until graduation. GPA requirements vary by academic program.
- All coursework must be completed within six years of taking the first JUMP class.
- Once all undergraduate degree requirements have been met, students apply to their graduate program through a simplified application process.
- If a change is made to the initial JUMP application, both a JUMP change form and a change to the student's undergraduate Program of Study (POS) must be submitted for approval to the student's JUMP Launch and Landing Advisors.
- Students cannot hold a graduate assistantship, graduate scholarship, or graduate fellowship until the undergraduate degree is completed.

## Admissions Requirements, Non-Degree Seeking Students

### Eligibility

A general Non-Degree seeking student is one who is not currently enrolled in or pursuing a degree at another institution and who desires to enroll at UAH for one or more terms to take certain advanced coursework for personal or professional growth. Any adult who has completed high school or completed the GED with a minimum score of 170 at least two calendar years prior to the application term may apply for admission as a non-degree student. Credits earned or courses audited as a non-degree student are recorded on the student's permanent record. As appropriate, credit courses will be applied toward a regular undergraduate degree program when the individual qualifies for admission as a regular student. A student enrolled as a non-degree student must satisfy course prerequisites for each course taken and may be required to submit official transcripts from any prior collegiate institutions attended to show satisfactory completion of prerequisites. International students attending UAH on a student visa are not eligible for non-degree status. A student whose first language is other than English must demonstrate English language proficiency. See the [section](#) on English language requirements for nonnative speakers.

### Exceptions

Several factors are considered when determining eligibility as a Non-Degree Student. Students may be more



appropriately classified in other admission categories as outlined below:

- Students who have not yet graduated from high school must apply for admission via [Dual Enrollment](#).
- A student who has completed high school or earned at least a 170 on each section of the GED, but has not yet enrolled in college coursework, or a student who has graduated from high school or earned a GED at least two calendar years prior to the term of application for non-degree admission must apply as a degree-seeking first-year/freshman student.
- Students who have earned a bachelor's degree previously should apply as a Post-Baccalaureate student, which is a special category of Non-degree seeking students.

#### Enrollment

Non-Degree-seeking students who have attended another college or university must have an official transcript from the last school attended sent to the Office of Admissions. The student must be in good academic standing at the last institution attended, if the application is submitted within one year of last enrollment. Applicants who have not attended another college or university must submit an official high school transcript, including graduation date, or an official GED test report to the Office of Admissions.

Once admitted as a non-degree student, the student may only register for a maximum of 12 semester hours per term. Only 12 semester hours earned as a Non-Degree seeking student can be used toward an undergraduate degree at UAH. Please note that admission as a Non-Degree seeking student does not imply admission to an undergraduate or graduate degree program.

Non-Degree-seeking students are generally considered casual course takers and as such have the lowest priority in class registration. Enrollment in courses will be on a space-available basis, and degree-seeking students shall have priority should there be a wait-list. If a course has prerequisites that the student has not met, permission must be granted by the instructor before enrollment in the course. Non-degree students may provide evidence of meeting course prerequisites by providing an unofficial transcript to the appropriate academic advisor or Registrar staff.

A student enrolled in this category is subject to the same periodic review of their record as a regular student and is subject to the University's regulations regarding scholastic probation, dismissal, and reinstatement. (See [Academic Policies and Procedures](#).)

Non-Degree students cannot become candidates for a degree, be eligible for honors or hold officer positions in student organizations unless and until they reapply and are admitted as regular degree-seeking students. At such time, the student shall submit official transcripts from all institutions previously attended and meet regular admission standards.

Non-Degree students generally are not eligible for financial aid. It is recommended that applicants contact the Office of Financial Aid at 256.824.6650 for more information and to verify eligibility.

Students who are currently enrolled at other colleges may apply for admission as non-degree students to take credit classes that will count toward a degree at their home institution. A completed application, a non-refundable \$40 application fee, and an Official Transcript from the current college are required. This verifies eligibility to return to the student's home institution and verifies the home college will accept the UAH courses for degree requirements. Students should satisfy UAH course prerequisites for each course taken and may be required to submit other official transcripts showing satisfactory completion of prerequisites.

## Admissions Requirements, Post-Baccalaureate Students

#### Eligibility

A Post-Baccalaureate student is one who has already earned a bachelor's degree and who desires to enroll at UAH for one or more terms to take certain advanced coursework for personal or professional growth. In addition to the application and non-refundable application fee, applicants must submit to the Office of Admissions an official transcript from the college or university from which the baccalaureate degree was earned.

#### Exceptions

Students who have already earned a bachelor's degree and wish to enroll as degree-seeking students should apply as Second Bachelor's applicants. These applicants must have a minimum cumulative grade point average of 2.0 and have all official transcripts of coursework attempted sent to the UAH Office of Admissions. Please note that admission as a Post-Baccalaureate student does not imply admission to an undergraduate or graduate degree program.

#### Enrollment



As with all Non-Degree seeking students, Post-Baccalaureate students are generally considered casual course takers and as such have the lowest priority in class registration. Enrollment in courses will be on a space-available basis, and degree-seeking students shall have priority should there be a wait-list. If a course has prerequisites that the student has not met, permission must be granted by the instructor before enrollment in the course. Non-Degree students may provide evidence of meeting course prerequisites by providing an unofficial transcript to the appropriate academic advisor or Registrar staff.

Post-Baccalaureate students are limited to 12 semester hours each term. Additionally, a maximum of 24 semester hours earned as a Post-Baccalaureate student can be applied toward a second bachelor's degree should a student decide to apply as a degree-seeking student.

A student enrolled in this category is subject to the same periodic review of his or her record as a regular student and is subject to the University's regulations regarding scholastic probation, dismissal, and reinstatement.

Post-Baccalaureate students cannot become candidates for a degree, be eligible for honors or hold officer positions in student organizations unless and until they reapply and are admitted as regular degree-seeking students under the Second Bachelor's application category. At such time, the student shall submit official transcripts from all institutions previously attended and meet regular admission standards, which includes a minimum cumulative grade point average of 2.0 in all attempted coursework.

Post-Baccalaureate students generally are not eligible for financial aid. It is recommended that applicants contact the Office of Financial Aid at 256.824.6650 for more information and to verify eligibility.

### **Admissions Requirements, Re-Admit Students**

A student who has not attended UAH for one or more semesters and who wishes to return should apply for admission through the Undergraduate Admissions Department. Returning students are held to the same requirements and university policies as newly admitted students. The Office of Admissions encourages Readmit students to contact their academic advisor to determine whether curriculum or degree requirements have changed since their last enrollment. Readmit students are required to submit official transcripts from any college/university attended since leaving UAH. Applicants must hold a cumulative 2.0 GPA in coursework completed since attending UAH. Applicants must also be in good standing at all previously attended colleges/universities.

### **Admissions Requirements, Transfer Students**

Individuals who have completed 24 semester hours of transferable academic credit from regionally accredited colleges or universities with a 2.0 or better GPA may be admitted to UAH as transfer students without having to submit high school transcripts, ACT or SAT scores. Transfer students must submit official transcripts from all colleges previously attended. Transfer admissions decisions will be based on a full evaluation of transcripts from all colleges and universities attended with emphasis given to those courses in which the subject matter is acceptable and relevant to the desired UAH degree program. Applicants must be in good standing at their previous institutions and have a minimum overall 2.0 GPA as well as a minimum 2.0 GPA in all courses transferable to UAH to be considered for admission.

Applicants must demonstrate proficiency in the English language. Applicants whose first language is other than English should refer to the section on English language requirements for nonnative speakers. Students who have already completed a bachelor's degree and wish to earn a Second Bachelor's degree at UAH must meet regular transfer admission requirements. A student who is currently on suspension or dismissal from another college or university is not eligible for admission until his or her suspension period has ended or until the student is otherwise eligible to return to the prior institution.

Admission to the upper-division of the College of Nursing is an action independent from admission to the University. Students interested in pursuing the BSN should refer to the academic college section of this catalog for more information.

### **Admissions Requirements, Undergraduate**

The Admissions Staff is here to assist you as you explore your college options. With more than 100 areas of study in our nine colleges, 175+ student organizations, and suite-style living in the residence halls, we believe you will find UAH is the right place for you!

As you research UAH, make sure to contact your [Admissions Counselor](#) so they can help you along the way. From assisting you with your admission application to providing you with the most up-to-date information about campus to getting you in contact with other campus representatives, we are happy to help!

We know that visiting campus and getting involved is important in making your college decision. That's why we offer daily [campus visits](#), which allow you to speak with an Admissions Counselor and go on a student-led campus tour. We hope you'll also join us at one of the many [events](#) we host both here on campus and in your community!

## First Year Students Requirements for High School Graduates

This information pertains to applicants who desire admission as beginning freshman students after graduation from high school and who have not attended an accredited post-secondary institution (excluding Dual Enrollment or Dual Credit coursework). International students should refer to the section on International Student Admissions in addition to this section.

### Required Documents

The application for admission and a nonrefundable \$40 fee payable to UAH should be submitted as soon as possible after the beginning of the senior year. The \$40 application fee must be in US currency, drawn from a US bank. This fee may also be paid via MasterCard, Visa, or American Express while applying online.

The preferred time for receipt of applications for the fall semester is the preceding August-December 1st. The fee may be waived for applicants who can document that they have received a fee waiver because of economic need as determined by the College Board (SAT) or the American College Testing Program (ACT). It is the policy of the University not to defer or waive other application fees.

For more information please see the [Undergraduate Admissions](#) page.

### Admission Requirements

Admission to UAH requires graduation from regionally accredited high schools or completion of the General Education Diploma (GED), certain high school academic units, a cumulative high school grade point average in those academic units, and test scores outlined below.

#### Secondary School Record

An official high school transcript (sent by the high school directly to the Office of Admissions) reflecting work completed from the beginning of the 9th grade through the 12th grade is required.

#### College Transcripts

Students who have registered for coursework at community colleges, four-year colleges, or universities through dual enrollment or non-degree student status must submit official transcripts from each post-secondary institution attended. Transcripts are considered official when they are sent from a college or university directly to the Office of Admissions and contain an official seal and signature. Transcripts bearing the statement, "Issued to Student," or transcripts faxed or submitted by applicants are not considered official.

### Test Scores

The examination offered by the American College Testing Program (ACT) or the Scholastic Assessment Test (SAT) administered by the College Entrance Examination Board is required of all applicants for first-year admission. Students may apply without their ACT or SAT scores via the test optional admissions policy. First-year students that apply without ACT or SAT test scores may be ineligible for university academic scholarships.

### Suggested High School Course Units

The Office of Admissions suggests that applicants should earn four units of English; three units of mathematics, (suggested courses include Algebra I, Algebra II, and Geometry. Trigonometry is also highly suggested by the College of Engineering and recommended by all other colleges); three units of natural science; four units of social studies/social sciences (includes history, civics, political science, economics, sociology, psychology, and geography), and four units of electives that may include courses such as foreign language, computer programming, religion, philosophy as well as higher-level science and math courses. These are suggested courses and questions concerning this information should be directed to the Office of Admissions.

### English Language Proficiency Requirements

Applicants must demonstrate proficiency in the English language. Applicants whose first language is other than

English should refer to the section on [English language requirements](#) for non-native speakers.

#### Academic Qualifications

Each applicant is evaluated based on individual merit and demonstrated success in a rigorous academic environment. High school coursework, grade point average, and ACT/SAT scores are weighed heavily; however, these criteria do not constitute the entire foundation for an admission decision. An applicant with a grade point average of 2.9 and a composite score of 21 on the ACT or equivalent SAT, for example, is considered a strong candidate for admission.

UAH will not require new freshman students to submit an ACT or SAT score when applying for admission for the 2024-2025 academic year. On the admissions application, students will have the option to select if they wish to have test scores considered for admission and scholarship purposes. Students who feel their ACT or SAT test scores accurately reflect their quality of work in high school are encouraged to submit test scores and not apply test-optional. Learn more about the Test-Optional policy at [uah.edu/test-optional](http://uah.edu/test-optional).

#### Home-Schooled Applicants

Homeschooled high school students are reviewed for admission and scholarships at UAH following the same criteria used for students attending public and private high schools. Admissions decisions will be based on grades and test scores earned within the student's first four years of high school enrollment.

To be considered for admission homeschooled students completing an accredited homeschool program must submit an official transcript that includes the student's academic record beginning with grade nine and must be signed by an administrator. If necessary, descriptions of each course completed, textbooks used, and the teaching credentials of the homeschool teacher may be requested.

Homeschooled students completing a non-accredited or self-designed homeschool program are required to provide a full academic record beginning with grade nine using the UAH Non-Accredited or Self-Designed Homeschool Transcript Template. More information can be found on the [Office of Admissions website](#).

#### General Education Development (GED) Recipients

Persons who have not graduated from high school may be admitted based on a satisfactory score on the GED test. A score of 170 or higher on each section is required for regular admission status. An official ACT or SAT score report may be requested. An official transcript of completed high school courses is also required. UAH is no longer a testing center for the GED program. Anyone seeking additional information or wishing to take the GED examination should visit [GED.com](http://GED.com).

#### Conditions of Admission

The Office of Admissions will notify the applicants of the admission decision. Admission to the university is often contingent upon the subsequent receipt of satisfactory and official college, university, or high school transcripts; verification of associate of arts or baccalaureate degrees; and verification of high school graduation. Failure to submit such documents before the end of the second week of class of the initial academic semester may result in the cancellation of admission.

### Disciplinary History Review

UAH is committed to ensuring a safe learning environment for all students, faculty, and staff. As a part of this commitment, students who indicate on their admissions application that they have pending criminal charges or have been convicted of a crime may be required to disclose information as a required step in the application process. In addition, students who have ever been expelled or dismissed from an educational institution for disciplinary reasons may also be required to disclose information as a required step in the application process. A previous conviction, pending criminal charges, or other expulsion or dismissal does not automatically bar admission to the University but does require review and evaluation.

### Dual Enrollment Program

#### Dual Credit:

Several local school systems have an agreement with UAH permitting high school juniors and seniors to take classes at UAH that may count for both high school credit toward graduation and college credit toward a degree at the University. With the approval of their school officials, high school juniors and seniors who meet regular UAH admission requirements and have at least a 2.9 high school academic GPA may take classes at UAH and receive credit at both the high school and college level for UAH classes approved by the school system.

## Dual Enrollment:

Academically talented high school students may apply to UAH to receive college credit upon the successful completion of approved courses. Students must be enrolled in high school and have a cumulative 2.9 high school academic GPA.

Applying for the Dual Enrollment program at UAH requires:

- a completed Dual Enrollment application with approved signatures from a high school official as well as the student's parent or guardian
- the \$40 non-refundable application fee
- an official transcript of high school work

## Graduate Assistantships

Graduate assistantships are offered to encourage graduate-degree work, promote teaching, and promote research. Graduate assistants have a graduate degree as their primary goal, and the assistantships are part of their graduate education. Assistantships are available through various departments of instruction, under the auspices of the Graduate School. Any student qualified for unconditional admission to the Graduate School is eligible to apply for a graduate assistantship.

A student eligible for an assistantship may be appointed as a Graduate Teaching Assistant (GTA), Graduate Research Assistant (GRA), or Graduate Administrative Assistant (GAA). Full-time assistantships usually require 20 hours per week of service to the University. All full-time graduate assistants must be registered for a minimum of nine (9) semester hours in Fall and Spring and six (6) semester hours in the Summer. All courses for which the student is registered shall be graduate credit courses.

All assistantship appointments are subject to the continuing availability of funds. Appointments are made by the department only when resources to support them are confirmed, but students are cautioned that a variety of circumstances could cause positions to be terminated prior to the end of the appointment period. All assistantships are awarded contingent upon the student's satisfactory progress toward a graduate degree. Only students in good academic standing are eligible for and may be awarded an assistantship. Assistantship support may continue through one additional semester after the semester in which degree requirements are completed.

### Benefits Tuition and Fees

A graduate assistant who holds a full-time assistantship (20 hours per week) appointment will receive a [tuition and fee](#) waiver at the in-state tuition rate for nine (9) to twelve (12) credit hours each Fall and Spring semester and six (6) credit hours in the Summer semester. A graduate assistant who holds a part-time assistantship (10 hour per week) appointment will receive a tuition and fee waiver at the in-state tuition rate for four and half (4.5) to six (6) credit hours each Fall and Spring semester and three (3) credit hours in the Summer semester.

### Stipend

Assistantship stipends vary in amount by assistantship type, degree program, and student academic progress. Students receive an offer letter indicating the amount of the stipend. Stipend rates are listed on the Graduate School [FAQs webpage](#). Further information may be obtained from the department or the Graduate School.

### Graduate Teaching Assistantships

A GTA shares the faculty's responsibility for teaching. The purpose of this assistantship is two-fold: one is to support the departmental teaching program, and the other is to aid the student's professional development. GTAs must have completed at least 18 semester hours of graduate coursework in their discipline to qualify as the Instructor of Record in any class. GTAs may also qualify for other duties as assigned, which do not require 18 semester hours of graduate coursework. These duties may include working as a laboratory instructor, tutor, grader, or other activities related to the educational mission of the department. The GTA's teaching load will necessarily vary from one department to another, and the load should be proportional to the normal full-time teaching load carried by other faculty members in the department.

### Graduate Research Assistantships

A GRA performs research duties as directed by their supervisor. GRA duties may include documentation,

experimentation, interviews and other activities that support the academic endeavor of the supervisor. At times, a research project to which the GRA is appointed may eventually lead to a thesis or dissertation topic; however, a faculty member cannot guarantee that a particular project will provide suitable material for a thesis or dissertation. All GRA appointments are subject to the continuing availability of funds. Appointments are made only when resources to support them are assured, but a financial emergency to the University could cause positions, including those of GRAs, to be terminated prior to the end of the appointment period. Assistantship support normally will not continue past the end of the semester in which the GRA expects to complete degree requirements. Some contracts or grants may specify United States citizenship as a prerequisite for GRA appointments.

#### Graduate Administrative Assistantships

A GAA performs administrative duties under the supervision of a faculty/staff member. Typical GAA duties might include clerical support, technical support, equipment or facilities management, or translation.

#### Retaining an Assistantship

Retaining the graduate assistantship is contingent on maintaining a minimum of a 3.000 grade point average (GPA); making satisfactory progress toward a graduate degree; performing assigned duties acceptably; complying with all policies in the [Academic Catalog](#), the [Student Code of Conduct](#), and general UAH employment regulations; and the availability of sufficient funds. Failure to meet these requirements may result in the termination of the assistantship. Graduate Assistants who resign or are terminated within an active semester will have their tuition and fee waiver benefits cease on the date of termination or resignation. Graduate students who continue in their program of study after a resignation or termination from an assistantship will not qualify for any of the above-referenced benefits, including, if applicable, in-state tuition.

#### International Students

International students must be registered for a minimum of nine (9) graduate credit hours during their first semester on campus. This requirement also applies if the student begins their first semester during the summer session. English proficiency is a prerequisite for classroom or laboratory instruction for all non-native English speakers wishing to obtain an assistantship. Please visit the "Admissions Requirements for International Students" section of the catalog for more information regarding [language requirements](#).

#### Sample Offer Letter and Terms and Conditions

The following is an example of the offer letter and terms and conditions that students will receive from the departments. The offer letter will describe the type of assistantship offered by the department and will contain details of the assistantship duration, workload, course load, and the tuition and stipend benefits available through the assistantship package. Students must sign the letter and initial next to the terms and conditions to indicate their acceptance of the offer.

[Date]

[Name and A#]

[Email]

Dear [Student Name]:

*We are pleased to offer you a Graduate Assistantship at The University of Alabama in Huntsville (UAH). This assistantship provides not only the means of defraying the costs of your graduate education but also affords opportunities to broaden your professional development.*

*You are being offered a [full-time or part-time] [Graduate Research Assistantship (GRA), Graduate Teaching Assistantship (GTA), or Graduate Administrative Assistantship (GAA)] in the Department of [XXXX], College of [XXXX], for the [Fall, Spring, Summer] semester(s) of the [XXXX - XXXX] academic year. You will perform [research, teaching, administrative] duties under the direction of [Name of Principal Investigator or Supervisor] for approximately [10 for half-time/20 for full-time] hours per week. During the period of this assistantship, an estimated total tuition and fees, including full health insurance for the student, in the amount of [\$XXXX.XX [enter the total for all selected semesters]] will be paid on your behalf. Additionally, during the period of this assistantship you will receive an estimated total stipend [Level 1, 2, or 3] in the amount of [\$XXXX.XX [enter the*

*total for all selected semesters]], paid biweekly according to UAH guidelines. Current tuition and fee information can be found on the UAH Bursar's website. Current stipend levels for graduate assistantships can be found on the Graduate School FAQs website.*

*Please note that there are no assurances or promises for continued employment. Continued employment may be based on availability of funding and/or the needs of the department/college, and may also be subject to additional provisions established by the University and/or the Board of Trustees of the University of Alabama.*

*Detailed information about your assistantship is provided on the attached sheet. Please read this information carefully. If you wish to accept this offer, please sign, date, and include your student A# in the spaces designated below, and initial each of the paragraphs on the following pages. Return it to [department email] by [select April 15 or later, per Council of Graduate Schools Resolution]. Signing this offer indicates your acknowledgement of the terms and conditions of the assistantship. If you have any questions regarding this offer, please contact the Department of [XXXX] at [email or phone]. Note that students are under no obligation to respond to offers of financial support prior to April 15; earlier deadlines for acceptance of such offers violate the Council of Graduate Schools Resolution Regarding Graduate Scholars, Fellows, Trainees, and Assistants.*

*You were selected for funding from a pool of very talented applicants, and we hope that you choose to join UAH. Congratulations on receiving this assistantship, and we look forward to working with you.*

*Sincerely,*

*[Signature of Department Chair]*

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*[Signature of PI (GRA), Dean (GTA), Supervisor (GAA)]*

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*I accept this offer.*

---

*Student Signature*

---

*Student A#*

---

*Date*

*GRADUATE RESEARCH ASSISTANT RESPONSIBILITIES: A GRA performs research duties as directed by their supervisor. GRA duties may include documentation, experimentation, interviews and other activities that support the academic endeavor of the supervisor. At times, a research project to which the GRA is appointed may eventually lead to a thesis or dissertation topic; however, a faculty member cannot guarantee that a particular project will provide suitable material for a thesis or dissertation. All GRA appointments are subject to the continuing availability of funds. Appointments are made only when resources to support them are assured, but a financial emergency to the University could cause positions, including those of GRAs, to be terminated prior to the end of the appointment period. Assistantship support normally will not continue past the end of the semester in which the GRA expects to complete degree requirements. Some contracts or grants may specify United States citizenship as a prerequisite for GRA appointments.*

*GRADUATE TEACHING ASSISTANT RESPONSIBILITIES: A GTA shares the faculty's responsibility for teaching. The purpose of this assistantship is two-fold: one is to support the departmental teaching program, and the other is to*

*aid the student's professional development. GTAs must have completed at least 18 semester hours of graduate coursework in their discipline to qualify as the Instructor of Record in any class. GTAs may also qualify for other duties as assigned, which do not require 18 semester hours of graduate coursework. These duties may include working as a laboratory instructor, tutor, grader, or other activities related to the educational mission of the department. The GTA's teaching load will necessarily vary from one department to another, and the load should be proportional to the normal full-time teaching load carried by other faculty members in the department.*

*GRADUATE ADMINISTRATIVE ASSISTANT RESPONSIBILITIES: A GAA performs administrative duties under the supervision of a faculty/staff member. Typical GAA duties might include clerical support, technical support, equipment or facilities management, or translation.*

*STIPEND: This assistantship is at Level [XX] and carries a stipend of \$[XXXX] per semester, payable biweekly under the UAH payroll guidelines. For details of payment patterns, students should contact their department office.*

*TUITION AND FEE PAYMENT: These students' tuition and fee charges for the academic year will be at the in-state graduate rate (approximately \$[XXXX]/term) and will be paid for up to [XX] credit hours per semester. The student is responsible for the tuition and fees exceeding this limit. Fees may include but are not limited to college fees, infrastructure fees, insurance, and international fees (as applicable to international students).*

*FEE ACKNOWLEDGEMENT: Payment of fees not covered by this assistantship award is the student's responsibility.*

*HEALTH INSURANCE: The full premium for the student's health insurance coverage will be provided each semester during which the assistantship is in effect. International students MUST maintain this insurance coverage per SEVIS regulations. Any concerns or questions regarding student health insurance should be directed to the Graduate School.*

*Do you accept the University's health insurance benefit?*

*INITIAL ONE:*

*[ ] Yes, I accept*

*[ ] No, I decline*

*INTERNATIONAL STUDENT FEE: If the student is an international student, the International Student Fee (approximately \$150 per semester) will be paid on behalf of the student as part of this assistantship.*

*COURSE LOAD: Full GTA/GRA/GAAs (working 20 hours per week) are expected to be full-time students taking at least nine (9) graduate credit hours per term in fall and/or spring, and at least six (6) graduate credit hours during the summer term. Half GRA/GTAs (working 10 hours per week) must be enrolled in at least four and a half to six (4.5 – 6) graduate credit hours per term in fall and/or spring, and at least three (3) graduate credit hours during the summer term. Students who hold an international F-1 visa must be enrolled in at least nine (9) credit hours during the fall and spring terms for immigration compliance. Summer course registration for both domestic and returning F-1 international students is optional, but students must be registered for coursework if they accept an assistantship during any semester of the academic year. Withdrawal from any course(s) that results in a course load less than these levels will require the student to reimburse the University for that course's tuition; international students may lose their immigration status. Registration for any courses other than graduate courses requires the approval of the student's advisor and department chair.*

*WORKLOAD AND PERIOD: The student workload per week is based on the offer of a full-time (20 hours per week) or part-time (10 hours per week) assistantship. The work period for each semester will follow the published dates of the academic calendar. The student will work [XX] hours per week from:*

*Fall Term: [month/day/year] through [month/day/year]*

*Spring Term: [month/day/year] through [month/day/year]*



*Summer Term: [month/day/year] through [month/day/year]*

*This period includes all staff working days as shown in the University's academic calendar. GTAs are responsible for supporting faculty during all faculty teaching days of the academic semester.*

*PERFORMANCE: Retaining the graduate assistantship is contingent on maintaining a minimum of a 3.000 grade point average (GPA); making satisfactory progress toward a graduate degree; performing assigned duties acceptably; complying with all policies in the [Academic Catalog](#), the [Student Code of Conduct](#), and general UAH employment regulations; and the availability of sufficient funds. Failure to meet these requirements may result in the termination of the assistantship. Graduate Assistants who resign or are terminated within an active semester will have their tuition and fee waiver benefits cease on the date of termination or resignation. Graduate students who continue in their program of study after a resignation or termination from an assistantship will not qualify for any of the above-referenced benefits, including, if applicable, in-state tuition.*

*ACADEMIC PROBATION RELATED TO ASSISTANTSHIPS: Students who fall below a 3.000 cumulative GPA will be placed on Academic Probation Status (APS). Students will be notified of their probationary status by the Graduate School as soon as the probation list is prepared by Graduate School staff. If a student holds a GTA/GRA/GAA and was not successful in obtaining a cumulative GPA of 3.000 or higher, the student will have one semester while working the assistantship to raise their GPA to a 3.000 or higher. Otherwise, the assistantship is immediately terminated at the end of the probationary semester. GTA/GRA/GAAs may only go on probation once during their period of enrollment. The GTA/GRA/GAA appointment for students will be terminated immediately if the cumulative GPA falls below 3.000 more than once.*

*ENVIRONMENTAL HEALTH AND SAFETY TRAINING: All Graduate Assistants should be familiar with UAH guidelines for emergency prevention measures, how to prepare themselves and students for emergencies, and typical emergency responses. Graduate Assistants must provide leadership to underclassmen and visitors who may not be knowledgeable about buildings and classrooms on campus. All Graduate Assistants will participate in mandatory safety training conducted by the Office of Environmental Health and Safety (OEHS). The student should contact OEHS for training dates.*

*LABORATORY SAFETY: The student is required to attend all mandatory laboratory safety meetings required by their department prior to beginning their assigned duties. The student should contact their department for further details. Failure to attend will result in forfeiture of this assistantship.*

*GTA TRAINING (ONLY APPLICABLE TO GTAs): All new GTAs must participate in an on-line training session through Canvas, as well as in-person training. Details and instructions will be provided to all GTAs within Canvas. Failure to participate in any required training will result in forfeiture of this assistantship.*

*GRA TRAINING (ONLY APPLICABLE TO GRAs): All UAH faculty, staff, and students who do not hold a security clearance and are charging to a research grant or contract are required to complete the Undue Foreign Influence: Risks and Mitigation Training in CITI.*

*OUTSIDE EMPLOYMENT: Students holding 20-hour per week assistantships may not hold additional employment during the term of this assistantship. Students with less than 20-hour per week appointments may supplement their assistantships with other employment up to a combined 20-hour per week maximum. Students who violate this provision may forfeit and/or be required to refund their stipend and tuition benefit. International students may lose their immigration status.*

*DOMESTIC STUDENT ELIGIBILITY: This offer is contingent upon unconditional admission by the student's department. Provisionally and conditionally admitted domestic students are not eligible for an assistantship. Students who are provisionally or conditionally admitted may qualify to hold an assistantship once they reach unconditional admission status.*

*INTERNATIONAL STUDENT ELIGIBILITY: This offer is contingent upon unconditional admission by the student's department. International students may not be admitted conditionally or provisionally. University policy requires that all noncitizens of the United States hold appropriate visas to accept graduate assistantships. The assistantship will be terminated if the recipient is in violation of any policy of the United States Immigration and Customs Enforcement and includes the prohibition of outside employment during the term this assistantship is in effect.*

*WORK AUTHORIZATION: This offer of employment relies upon the student's satisfaction of the employment eligibility requirements established by the Federal Immigration control law. Specifically, the student must complete the first part of a government form (USCIS Form I-9) and submit it with original documents pertaining to their identity and employment to the University for examination. This must be done by the first day of*



*employment before the student begins work for the University.*

*IMMIGRATION PROCESSING: If the student is studying at UAH on an international student visa, they must report for "immigration processing," which coincides with New International Student Orientation. The student must complete immigration processing with the Office of International Services prior to beginning their assistantship duties and to be eligible to register for classes. If the student anticipates any difficulty reporting to UAH in time for immigration processing, they should contact the Graduate School and the Office of International Services at 256-824-6055 or email [iss@uah.edu](mailto:iss@uah.edu). Failure or inability to comply will mean that, under federal law, the University will not be permitted to employ the student.*

*BACKGROUND CHECK: Graduate students who plan to work for UAH in any graduate assistantship role are subject to a background check, the results of which will be used to evaluate eligibility for hire. This offer of employment is contingent upon receipt of a satisfactory background check. A Background Check Release Form will be sent to the student and the student must grant permission to Human Resources to conduct the background check.*

## **Tuberculosis Screening and Immunization Requirements**

All students, regardless of classification, must submit completed immunization forms and/or supporting documentation to the Student Health Center **at least 30 days** before the start of classes. [Requirements and Forms are found on the UAH website.](#)

## **Course and Program Enrollment**

### **Change of College**

Undergraduate Students

Students who are pursuing a program of study in one college at UAH and desire to change to a program in another college may petition to do so by making [application](#) at the Office of the Registrar. Academic advisement before changing programs may help students avoid losing credits. Application of previously earned credits toward the new program will be determined after the transfer has been approved.

The [Change of College form](#) is for undergraduate students only. If you wish to add a Dual Degree, please see the [Dual Degree Form](#). If you are changing your major within the same college or adding a minor, please [contact](#) your academic advisor.

### **Course Attendance**

Education at UAH depends upon the cooperation of students and faculty. Students are held responsible for the full work of the course in which they are registered, including participation in the discussion and work of the class at each class meeting.

A student's final grade in each course is determined on the basis of identified course requirements; therefore, regular class attendance is important.

### **Course Numbering System**

Range	Student Normally Takes Courses
001-099	Refresher (noncredit): Remedial courses or prerequisite courses needed to meet certain conditions of admission that do not apply toward any degree requirement.
100-199	Freshman: Introductory lower-division undergraduate courses, usually taken by first-year students that generally do not include prerequisites.
200-299	Sophomore: Lower-division undergraduate courses usually taken by second or third-year students where content is built on materials from the first-year level that may include a minimal amount of prerequisite preparation.
300-399	Junior (upper-level): Upper-division undergraduate courses usually taken by third- or fourth-year students that are normally courses in the major and often include significant prerequisite preparation.
400-499	Senior (upper-level): Advanced upper-division undergraduate courses that require a high degree of disciplinary sophistication or specificity in content; these courses assume considerable prerequisite knowledge and experience and include courses that are cross-listed with graduate courses.
500-599	Graduate: Introductory graduate courses, many of which are cross-listed with 400-level courses; open to undergraduate students in an approved UAH accelerated degree program; open to undergraduate students by permission from the Graduate School; open to all graduate students.
600-699	Graduate: Intermediate-level graduate courses where content builds on introductory graduate classes; open to graduate students and to undergraduate students in an approved UAH accelerated degree program.
700-799	Graduate, Ph.D. level: Advanced graduate courses with significant graduate prerequisite information; open to graduate students.

## Course Requisites

Prerequisite, Prerequisite with Concurrency, Co-requisite

Some courses offered at UAH require students to complete a prerequisite or prerequisites prior to registering for a course, to register for a prerequisite with concurrency, and to register for a co-requisite course. The definitions for these categories are as follows:

**Prerequisite** – a course must be taken before a target course, i.e., successful completion of EH 101 before registering for EH 102.

**Prerequisite with Concurrency** – a course must be taken before or at the same time as a target course, i.e., CH 101 and CH 105; PH 111 and PH 114; CE 271 and MA 201. A "W" or "F" grade in one course does not require that a student re-register for both courses. Prerequisite with concurrency courses do not have to be completed at the same time. A student may withdraw from a target course or a concurrent course and continue enrollment in the other course and vice versa. **Note: A student may be asked to withdraw from a required course if, in the judgment of the instructor/chair/advisor, the student does not have the requisite knowledge to successfully complete the course (i.e., CE 271 and MA 201).**

**Co-requisite** – a course must be taken simultaneously with a target course, i.e., PH 102 and PH 102L; CPE 211 and CPE 211L; MAE 311 and MAE 311L; NUR 660 and NUR 660L, and etc. Co-requisite courses must be completed at the same time. A student may withdraw from a target course; however, the student must also withdraw from the co-requisite course and vice versa.

## Disability Support Services

Disability Support Services (DSS) is committed to ensuring access to educational opportunity for all qualified

students with disabilities. Students must self-identify to DSS by completing an application, sharing documentation of their diagnosis and functional impairment, and scheduling and completing an intake appointment where through an interactive process they will be assigned reasonable accommodations going forward. The student then chooses which accommodations to use for each of their classes each semester. Disability Support Services are provided in accordance with federal law. For more information visit our webpage at <https://www.uah.edu/dss> or contact us at 256.824.1997, [dss@uah.edu](mailto:dss@uah.edu), or come by Wilson Hall 128.

## **Double Major/Dual Degree/Second Bachelors**

### **Undergraduate Students**

A student may choose to have a double major and earn one degree. The following policy applies to those students who wish to earn two degrees simultaneously or sequentially to a first degree. As early as possible, a student should meet with an assigned faculty advisor to indicate on the Program of Study form the intent to pursue a second degree. The Program of Study form must specify the requirements for each degree and contain the approval of the appropriate chairs and dean(s).

With approval of the two appropriate departments, a student who wishes to concentrate in two disciplines may pursue a program of study that leads to a B.A. or B.S. degree with a double major. If a minor is required for a major, then the minor requirement is waived for students with double majors. General education requirements and all requirements stipulated for each of the two majors must be completed. The total requirements of some programs may exceed 128 semester hours.

### **Dual Degree**

If a student elects to earn a second degree simultaneously with a first degree (e.g., B.A. and B.S.), the student must:

1. satisfy all applicable requirements for each degree,
2. earn at least a C average in all UAH coursework,
3. complete minimum degree requirements of the combined degree program, and
4. complete majors and/or minors appropriate to the degrees (a major for one degree may count as a minor for the other degree).

### **Second Bachelor's Degree**

If a student elects to earn a second degree at UAH after having earned a first degree at UAH or another institution (e.g., B.A. after earning a B.S.B.A.), the student must:

1. satisfy all applicable requirements for each degree (Charger Foundations requirements are satisfied through the first degree),
2. earn at least an average grade of C in all UAH coursework,
3. complete a minimum of 25% of the total degree requirements at UAH for the second degree, and
4. complete majors and/or minors appropriate to the degrees (a major for one degree may count as a minor for the other degree).

A specific course required for both the first and second degree does not have to be repeated; however, only courses completed after the first degree will be applied to the minimum number of semester hours required for the second degree.

Graduation with honors recognition for the second bachelor's degree requires a minimum of 60 semester hours of coursework taken at UAH above the requirements for the first bachelor's degree. Honors will be determined by the grade-point average for the last 60 semester hours of coursework taken at UAH above the requirements for the first bachelor's degree or all coursework taken at UAH above the coursework for the first baccalaureate degree, whichever is higher. Honors calculation for the second bachelor's degree follows the same procedures as graduation honors for the first baccalaureate degree.

## **Schedule Adjustments/Registration**

### **Schedule Adjustments**

After the beginning of an academic term, students seeking to change their course schedules must follow the Schedule Adjustment Process. Schedule adjustments fall into seven categories: Drop/Add, Late Addition, Credit/Audit, Withdrawal, Retroactive Withdrawal, and Medical Withdrawal. The following definitions and procedures will govern the Schedule Adjustment Process.

### **Drop/Add**

After classes have begun, students should consult with their academic advisor and other university officials for advice and approval before making any schedule changes. Students are advised to check the impact of dropping courses on things like financial aid, athletics eligibility, visa status, etc.

Through the sixth day of classes for a ten-week or fifteen-week semester, fourth day of a seven-week semester, or third day of a six-week or shorter semester, students may Add a course through the web-registration process, by meeting with their advisor, or by submitting a Registration/Schedule Adjustment form to the Office of the Registrar.

Through the sixth day of classes for a ten- or fifteen-week semester, fourth day of a seven-week semester, third day of a six week or shorter semester, students may Drop any or all courses from their schedule and receive a refund of tuition and fees associated with the dropped courses.

#### Late Addition

In rare circumstances a student may have a legitimate and substantial need to register, add a class or change a class section after the deadline (i.e., Last Day to Add a Class). In these instances the student must complete the Registration/Schedule Adjustment form, with recommendations (approval/non-approval) from the instructor and the chair of the department that offers the course. The Office of the Registrar will process the request once approvals are obtained.

New international students who want to register after the deadline must obtain approval from the International Student Advisor and, in the case of graduate students, the Graduate Dean. Approvals for late registration for new international students will include the respective academic units.

#### Credit to Audit

A student is permitted to change a course from credit to audit through the fourth week of a fifteen-week semester, the third week of a seven- or ten-week semester, and the second week of a five-week or shorter semester. The instructor is not required to grade any written assignments that may be submitted by an auditing student. A student who elects to audit a course may not, at any point after electing to audit, change to "for-credit," i.e., graded status. Any student failing to follow the established procedure for change to audit will continue to be enrolled in the class for credit and may receive a failing grade in that course.

#### Withdrawal

After the Drop/Add period, a student may withdraw from any course and receive a grade of W. The deadline for withdrawal is the last day of class prior to final exams for all parts of term.

Withdrawal is accomplished by either 1) executing a withdrawal on the registration website or 2) by submitting a Registration/Schedule Adjustment form to the Office of the Registrar. No signatures or approvals are required for a withdrawal, but students should consult with appropriate officials to determine the impact that withdrawing from a course may have on financial aid, athletics eligibility, visa status, etc.

Class non-attendance does not constitute withdrawal, nor does notification to the instructor. Any student failing to follow the established procedure for withdrawal will continue to be enrolled in the class and may receive a failing grade in that course.

#### Retroactive Withdrawal

Students may at times experience extraordinary problems during an academic term. Within two years of having completed such a semester, a student may petition the Dean of Students to withdraw retroactively from ALL classes taken during that term. A retroactive withdrawal is granted only under exceptional circumstances, such as extraordinary circumstances, and is only granted prior to graduation. The petition must use the Retroactive Withdrawal Form and include clear and documented evidence whenever possible. The Dean of Students verifies the documentation and considers the petition. If the request is granted, the grades for ALL courses taken during the semester in question will be changed to W's. Petitions for Retroactive Withdrawals are considered after final grades are posted. Students should be aware that retroactive withdrawals may have an impact on their ability to receive or retain financial aid and timely completion of their degree.

#### Recording of Withdrawals

If the withdrawal process is completed after the first six days of the semester, then the withdrawing student's name will be on the final roll of the class from which the student withdrew, and that course will be recorded on the student's permanent record with a final grade of W.

### **Seniors Taking Graduate Courses (Form 16)**

UAH seniors may take up to 9 semester hours of courses (500 or 600 level) for graduate credit while completing requirements for the baccalaureate if they meet the following qualifications:

1. An approved degree application is on file;
2. Overall GPA, or GPA for the last 40 semester hours, is at least 3.500;
3. Fewer than 13 semester hours remain for degree completion;
4. A total course load of no more than 12 hours a semester;
5. Permission of the instructor.

Students initiate the request process by completing the [Request for Approval of Graduate Credit by UAH Senior \(Form 16\)](#), which is available on the Registrar's website, and requires the approval of the department chair and graduate dean. A student may not use courses taken for graduate credit as part of the baccalaureate degree under this option. Please note, this is not the same as the Joint Undergraduate Master's Program (JUMP).

## **JUMP**

Seniors may wish to enroll in JUMP, which allows undergraduate students to double count their undergraduate courses for their graduate (MS) degree. For more information, please visit: <http://www.uah.edu/jump>.

## **Student Classification**

An undergraduate is classified as indicated in the following table when a student has completed the number of semester hours shown.

<b>Semester</b>	<b>Hours Earned</b>
Freshman	0-30
Sophomore	31-60
Junior	61-90
Senior	91 and up

## **Student Course Loads**

### **Undergraduate Students**

The typical full-time undergraduate course load is 15-18 semester hours each semester. Students should take between 30 and 33 semester hours annually in order to graduate in four years. The minimum full-time load for an undergraduate student is 12 semester hours per semester.

A part-time student is one who is enrolled in less than 12 hours and is defined as follows for all academic terms/semesters (fall, spring, summer):

Full time = 12 or more semester hours

$\frac{3}{4}$  time = 9.00 to 11.5 semester hours

$\frac{1}{2}$  time = 6.00 to 8.5 semester hours

Less than  $\frac{1}{2}$  time = 0.5 to 5.5 semester hours

Undergraduate students who wish to enroll in more than 18 semester hours per term must have [approval from their college dean](#).

### **Graduate Students**

The typical full-time graduate course load is 9-12 semester hours each semester. The minimum full-time load for a graduate student is 9 semester hours per semester.

A part-time student is one who is enrolled in less than 9 hours and is defined as follows for the following academic terms/semesters:

### **Fall, Spring**

Full time = 9 or more semester hours

$\frac{3}{4}$  time = 6.5 to 8.5 semester hours

$\frac{1}{2}$  time = 4.5 to 6 semester hours

Less than  $\frac{1}{2}$  time = 0.5 to 4 semester hours

### **Summer**

Full time = 6+ or more semester hours  
¾ time = 4.5 to 5.5 semester hours  
½ time = 3 to 4 semester hours  
Less than ½ time = 0.5 to 2.5 semester hours

Graduate students who wish to enroll in more than 13 semester hours per term must have [approval from the Graduate School Dean](#).

## Grades and Credits

### Academic Bankruptcy

#### Undergraduate Students

Requests for academic bankruptcy are considered by the Admissions and Scholastic Affairs Committee prior to the start of each term. The deadlines to submit a request for academic bankruptcy to the Registrar's Office (SSB 120) are July 1 for Fall, November 15 for Spring, and April 1 for Summer. Requests received after the deadline may not be considered until the following semester. Students should complete [the Request for Academic Bankruptcy form](#) and meet with the appropriate academic advisor before submitting it to the Registrar's Office.

- You may apply for Academic Bankruptcy only once during your UAH career.
- Academic Bankruptcy excludes ALL UAH courses completed prior to the date of bankruptcy.
- TWO YEARS must pass between the bankruptcy date and the date of application.
- Your transcript will be reviewed if you apply for Academic Bankruptcy.

#### Graduate Students

Graduate students are not eligible for academic bankruptcy.

### Alabama Transfers

An undergraduate student transferring from an Alabama junior/community college may choose to fulfill the degree requirements of the UAH catalog which was in effect at the time of the student's initial enrollment at the Alabama junior/community college, provided that the date does not exceed the seven-year limit. (See the time limits section of the catalog.) This policy enables students enrolled at Alabama junior/community colleges to plan degree programs effectively and to be assured that degree requirements specified for UAH students will be equally applicable, within specified limits, to transfer students.

UAH participates in the Alabama Articulation Agreement. Students intending to transfer to UAH from Alabama junior or community colleges are encouraged to consult with their advisors, the UAH Office of Admissions, and obtain an Alabama Transfers guide. This guide is also available at <https://alabamatransfers.com/>. When planning their programs of study, this guide will identify courses for their major and will show equivalencies for community college courses.

A maximum of 50% of an undergraduate degree program may be earned from a junior, community, or two-year college. Requests for exceptions must be in writing and approved by the dean of the college in which the student is enrolled.

### Change of Grade

When it is believed that a grading error may have occurred, a student is permitted a maximum of one semester from the date a grade is assigned to request a change of course grade. Grades submitted to the Office of the Registrar can normally be changed only by submission by the instructor on a [Change of Grade form](#) containing a written explanation of the error. The Change of Grade form must be approved by the department chair and received in the Office of the Registrar no later than two semesters from the date the original grade was assigned.

### Course Repeat and Forgiveness

#### Undergraduate Students

Undergraduate students should be aware that repeated or forgiven courses and their assigned grades will remain on the transcript, and employers or graduate schools may choose to use those grades and recalculate a student's GPA. Repeats and forgiven courses may not be looked upon favorably by some employers and by professional or graduate schools.

Undergraduate students shall be allowed to repeat no more than three (3) courses with grade replacement and to forgive no more than three (3) courses. Definitions of "course repeat" and "course forgiveness" and specific policies and procedures for each are described below.

### Course Repeat

Students repeat a course when they retake a course they have already taken. They may repeat the course to improve their grade or to obtain a better understanding of the course material. For undergraduates, the original grade remains on the transcript but is not calculated into the cumulative GPA. Undergraduates may have three repeats in which the new grade is used to calculate the cumulative GPA.

- Students may not replace a grade with a W.
- Students may not repeat a course for which they have higher-level credit. For example, a student cannot repeat Pre-Calculus Trigonometry after s/he has credit for Calculus.
- For the first three courses repeated, the original grade will not be calculated into the student's cumulative grade point average. Each course repeat counts against the maximum of three course repeats that can replace the previous grade. For example, a student may use all three repeats in a single course or in three separate courses or any combination of separate courses and multiple repeats of single courses.
- The transcript will show both the original grades and the course repeat grades, but only the grade points and semester hours earned in the repeated courses or final repeated course when multiple repeats are used for one course count toward graduation and are averaged into the student's GPA.
- After three course repeats, all other courses repeated at UAH will result in both the original grade and the course repeat grade being calculated into the student's GPA.
- This course repeat policy will be automatically applied unless the undergraduate student files for an exemption when registering.

### Course Forgiveness

Students have a course forgiven when the grade from that course no longer figures into their cumulative GPA, although it remains on their transcript. Forgiven courses may not count toward the requirements of a student's major. (Example: a student fails Calculus A, but has it forgiven upon request of the student because s/he changes to a major in a different college that does not require Calculus A. The grade from this course is no longer included in the student's cumulative GPA, although the course and the original grade still appear on the transcript as forgiven).

Only undergraduates may apply for course forgiveness.

- Students may forgive any three courses, provided that they are not required for their major.
- Any forgiven courses and the assigned grades remain on the transcript, but the grades are not calculated into the student's cumulative grade point average.
- Forgiveness cannot be used for classes in which an F was earned for academic dishonesty.
- Forgiveness is retroactive but must be done before graduation.
- Forgiveness does not apply to pass/fail courses.
- Students cannot transfer an equivalent course from another institution after a course is forgiven.
- Forgiveness cannot be unforgiven. (The grade for a forgiven course cannot be restored once forgiveness for that course has been approved.)
- Students apply for grade forgiveness by downloading the Course Forgiveness form from the [Office of the Registrar](#). Forms are also available in person in the Student Services Building, Room 120. Call 256.824.7777 or email [registrar@uah.edu](mailto:registrar@uah.edu) if you have any questions.

### Graduate Students Course Repeat

Students should be aware that course repeats, for any reason, may not be looked upon favorably by some employers and by professional schools; hence, they should avoid the need for repeats.

Students may repeat any course an unlimited number of times in order to achieve a passing grade or an improved understanding of the course material.

One course may be repeated with the previous grade excluded from the calculation of the student's grade-point average. The student must declare such a course repeat before the end of the regular registration period for the

semester in which the course will be repeated. Only a course for which the student has received a grade of C, D, or F may be repeated under this option. When withdrawing from a course that has been declared as a course repeat, the previous grade will still be used in the computation of the GPA, and the course will not count toward the maximum of one repeat. Until a grade other than W is reported, the previous grade will be used for the GPA. The transcript will show both the original grades and the course repeat grades, but only the grade points and credit hours earned in the repeated course will count toward graduation and will be averaged into the student's GPA. Concurrent registration for multiple sections of a course is not allowed.

For all other courses repeated at UAH, both the original grade and the course repeat grade will show on the transcript and will be calculated in the student's GPA.

A student wishing to exercise the option of repeating a course with grade replacement must file the intent to do so in the Office of the Registrar before the end of regular registration using a [Course Repeat/Forgiveness Declaration](#) form.

#### Course Forgiveness

Graduate students are not eligible to use Course Forgiveness.

### Degree Requirements, General Doctoral

UAH offers doctoral-level programs in the Colleges of Engineering, Science, Nursing, and Arts, Humanities, and Social Sciences. For specific information regarding Nursing's Doctor of Philosophy (Ph.D.) or Doctor of Nursing Practice (DNP) degrees, please visit the College of Nursing [website](#).

#### The Doctor of Philosophy Degree

The doctor of philosophy degree is a research-oriented degree awarded upon the demonstration of scholarly competence. The degree program at UAH is based on the successful completion of a program of study (POS) designed by the student and a faculty committee. The program may include mastery of certain research skills (*e.g.*, languages, computer programming, statistics, and others approved by the Graduate Council) and must include an independent research project, the results of which are presented in the form of a dissertation.

#### Degree Requirements

The following specific degree requirements are applicable to all Ph.D. degree programs within the University. Additional requirements may be specified by individual colleges and/or departments as shown in this catalog under the appropriate section.

#### Course Requirements

Course requirements, including at least 48 hours of graduate coursework (excluding dissertation research), are defined in the POS and are determined by the appropriate department. Usually, the student will take a majority of the courses in a given field with the remainder in a cognate field. This, however, is not a requirement. A maximum of nine semester hours credit in thesis/research work from the master's degree may be allowed to count toward the 48-hour requirement. Students must also satisfactorily complete a minimum of 18 semester hours of dissertation research (799). Students must register for dissertation research each semester in which they receive faculty supervision. The approval of the POS should be accomplished as early as possible, but no later than one year after admission to the Ph.D. program. Once approved, the program may be amended only with the approval of the supervisory committee upon submission of the [Change to Program of Study](#) form and approval of the Graduate Dean.

#### Continuous Registration Requirement

All students who have completed the minimum coursework requirements for the doctoral degree they are pursuing (excluding dissertation hours) must register for a minimum of three semester hours of graduate credit (to include dissertation credit) each Fall and Spring semester until all degree requirements are complete.

#### Transfer Credit

All credit toward the Ph.D., which has not been earned at UAH, must be acceptable graduate credit from an approved institution. Such credit may be transferred with the approval of the major Department/Program Chair if completed with a grade of B or better. A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).

#### Academic Residence Requirement



Residence at UAH as a doctoral student is required for evaluation of the student's investigative abilities, independent thought, and scholastic progress by faculty members other than the major Advisor. Residence may be established through either (1) being enrolled as a full-time student (at least nine graduate semester hours) either for one continuous academic year, or for Spring and Fall semesters in the same calendar year, or (2) being enrolled in at least six hours of graduate course work in at least three of four consecutive semesters. Colleges and/or departments may have more stringent requirements, and students should refer to the appropriate section of this catalog for details. All research effort presented for residence credit toward the Ph.D. degree must be performed under the direction of a full member of the graduate faculty.

#### Supervisory Committee

A supervisory committee is appointed for each student working toward the Ph.D., usually after satisfactory completion of a preliminary examination administered by the major department. The Ph.D. supervisory committee, which is composed of at least five members, shall be appointed by the Department/Program Chair, with approval of the Graduate Dean as part of the POS approval. Committee members shall all have been approved as graduate faculty, with at least half being full members of the graduate faculty and at least half being from the major department/program. The Committee Chair, who oversees the dissertation process, must be a full-time UAH graduate faculty member. If the Research Advisor, who oversees the research project, is not a full member of the UAH graduate faculty, then there must be a separate Committee Chair.

#### Qualifying Examination

The Qualifying Examination is given under the auspices of the Graduate School and must be administered by the supervisory committee within one year of the date the student completes the formal coursework on the POS. It is conducted in two distinct stages, which may be separated by a length of time deemed appropriate by the supervisory committee. The first stage is a demonstration through written and oral examination that the student is proficient in the subject matter in the POS. The final stage is the dissertation proposal review in which the student prepares a written report and makes a subsequent oral presentation describing the proposed dissertation research. Both the dissertation topic and expected approach(es) must be clearly delineated to the committee's satisfaction in order for a pass to be granted. The presentation of the oral dissertation research proposal must be scheduled through the Graduate School before the examination date. Once this review is complete, the results of the Qualifying Examination are reported to the Graduate School within two working days on the prescribed form. The presentation of the oral dissertation proposal may be given no more than twice.

#### Time Limit

The doctoral degree must be earned within 10 years (or by the end of the 30th consecutive semester, where consecutive semesters are Fall, Spring, and Summer). The clock starts when the graduate program's first credits are completed (if credits are transferred in, then the clock starts on the date the student is accepted into the program). All requirements must be completed no more than five years (or 15 consecutive semesters) after the student has passed the qualifying examination. Failure to meet this time requirement requires the student to take and pass another qualifying examination and (if required by the program) another implementation review.

#### Application for Degree

All candidates for a Ph.D. degree must apply for the degree by submitting the [Application for Graduate Degree](#) and fee to the Registrar's Office at least three months before the end of the semester in which degree requirements are expected to be completed.

#### Dissertation

The dissertation is evidence that the student can independently identify a problem of contemporary significance through familiarity with the current literature in the major field, organize and execute a program of research, recognize and analyze the results, and present them in cogent, well-written exposition. Furthermore, the dissertation should be written in fluent, acceptable English. Dissertation results are expected to be submitted for refereed scholarly publication. All dissertations must be accessible to the general public. A completed copy of the dissertation must be submitted to the major department by the deadlines published on the [Graduate School](#) website before the end of the semester in which degree requirements are expected to be completed. Dissertations must comply with the regulations set forth in the Graduate School's [Thesis, Dissertation, and DNP Project Manual](#).

#### Final Examination

Ph.D. candidates must pass a final examination that includes an oral presentation of the dissertation in the form of a seminar before the student's supervisory committee; the oral presentation is open to the members of the University community. Immediately following the oral presentation, the candidate will be examined by the supervisory committee in a closed meeting. The examination must be given within the semester in which degree

requirements are to be completed, according to the dates set by the Graduate School. The results must be reported to the Graduate Dean within two working days. A written notice of the time and place of examination must be sent to the Graduate Dean at least two weeks before the examination date. The Graduate Dean may appoint an additional member of the graduate faculty to act as an observer for each dissertation defense. Once set the examination becomes an official Graduate School matter; the date cannot be changed without prior arrangement among the supervisory committee members and the student, and without approval of the Graduate Dean. After approval by the Graduate Dean, the department sends a copy of the written notice to the candidate and each member of the supervisory committee. A student may take the final examination no more than twice. Students must be in good academic standing (3.000 or better) to schedule a dissertation defense.

#### Summary of Checkpoints toward Completion of Degree Requirements

The following scholastic requirements are those of the Graduate School. Individual colleges and/or departments may list additional requirements.

1. Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program;
2. No grade of D or F may be counted toward a graduate degree;
3. At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or higher;
4. A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
5. In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

The following checkpoints have been established to assist a student in proceeding from admission to graduation. Timely completion of the forms, in sequence, will help to ensure that a student's degree program is in order.

**POS:** The supervisory committee and the student should meet to develop a complete [POS](#) for the student. The approval of the POS should be accomplished as early as possible, but no later than one year after admission to the Ph.D. program. Once approved, changes in the POS must be submitted on a [Change to Program of Study](#) form and approved by the Committee Chair, Department/Program Chair, and Graduate Dean. A valid reason must be given for the change.

**Notification of Qualifying Examination:** [Notification of the qualifying examination](#) must be turned in to the Graduate School before the examination date.

**Report of Qualifying Examination:** Following the examination, the committee shall submit a signed [report](#) to the Graduate School.

**Application for Graduate Degree:** This should be filed three months before the end of the semester in which degree requirements are expected to be completed. The [application](#) is available on the Registrar's website.

**Notification of Dissertation Defense:** [Notification of the defense](#) must be submitted to the Graduate School at least two weeks before the examination date. This examination must be taken by the deadlines published on the Graduate School [website](#) before the end of the semester in which degree requirements are expected to be completed. The Graduate Dean may appoint an additional member of the graduate faculty to act as an observer for each dissertation defense.

**Report of Dissertation Defense:** Following the defense the committee shall submit a signed [report](#) to the Graduate School within two days.

#### Dissertation Submission

After the student has passed their dissertation defense, and by the published [deadline](#) on the Graduate School website, the dissertation signature form (with supervisory committee, Department/Program Chair, and College Dean signatures) must be submitted to the Graduate School. After the signature form is received, the Graduate School will contact the student with directions for creating an account in ProQuest. The student will upload the final dissertation draft to ProQuest by the posted [deadline](#) on the Graduate School website, and then the student will work with the UAH copyeditor to finalize the manuscript. All copyedits must be finished by noon on the last day of final exams before the published graduation date, or the student will not graduate in that semester. Dissertations must comply with the regulations set forth in the Graduate School's Thesis, Dissertation, and DNP Project Manual. Upon completion of the copyediting process and the Graduate School's acceptance of a student's dissertation, the Graduate Dean will sign the dissertation signature form. All dissertations must be accessible to the general public. Detailed [procedures](#) for submission can be found on

the Graduate School website. For specific questions call (256) 824-6055.

#### Late Submission

Students who miss the published dissertation/DNP project deadlines but submit all required documents to the Graduate School by the end of the current semester will not graduate in the current semester; instead they will fall under the dissertation/DNP project deadlines of the subsequent semester. These students may qualify for a 0-credit-hour option the subsequent semester if the 0-credit-hour option is offered by their departments. Students may only take the 0-credit-hour option once and must consult with their Committee Chairs in order to register for the 0-credit-hour option. Before registering for the 0-credit-hour option, students must request approval from the Graduate Dean by emailing their request and an explanation of the extenuating circumstances to [GradStudent@uah.edu](mailto:GradStudent@uah.edu). All copyediting in ProQuest must be completed by noon on the last day of final exams prior to the published graduation date in the semester during which the student plans to graduate.

## Degree Requirements, Masters

#### The Master's Degree as First Graduate Degree

Students may follow one of two plans for the master's degree, except where modified by individual departments. Students should submit a [Program of Study](#) with the help of an academic advisor before the completion of 18 semester hours of graduate coursework in order to ensure that courses taken will apply to the degree.

#### Thesis Plan

Degree requirements under this plan include completion of at least 24 semester credit hours of graduate coursework and at least six thesis credit hours of graduate coursework (699) toward the writing of an acceptable thesis. Students working on a thesis must register for thesis credit each semester in which they receive supervision or during which they are engaged in the formal preparation and/or defense of the thesis. The thesis should show evidence of the student's capability for research, independent thought, and analysis. Furthermore, the thesis should be written in fluent, acceptable English. The subject must be in the major field. All theses must be accessible to the general public.

Master's thesis supervisory committees shall be appointed by the Chair of the department or program, with approval of the Graduate Dean, and must be composed of at least three members. Committee members shall all have been approved as graduate faculty, with at least half being full members of the graduate faculty and at least half being from the major department/program. The Committee Chair, who oversees the thesis process, must be a full-time UAH graduate faculty member. If the Research Advisor, who oversees the research project, is not a full member of the UAH graduate faculty, then there must be a separate Committee Chair.

A completed copy of the thesis must be submitted to the major department and the thesis defended according to the dates set by the Graduate School, typically at least eight weeks before the end of the semester in which degree requirements are expected to be completed. The [specific dates](#) and detailed [procedures for submission](#) of theses can be found on the [Graduate School website](#). After the student has passed their thesis defense, a copy of the thesis approved by the committee members, Department/Program Chair, and College Dean must be submitted to the Graduate School for final copyediting and approval by the Graduate Dean. Theses must comply with the regulations set forth in the Graduate School's [Thesis Dissertation, and DNP Project Manual](#). Students must be in good academic standing (3.000 or better) to schedule a thesis defense.

In exceptional cases, theses may be written in absentia. Before leaving the University, students must 1) select a thesis subject, 2) submit to the major Department/Program Chair a satisfactory outline of the thesis, and 3) submit satisfactory evidence that adequate facilities are available where research is to be done. The student's Committee Chair, the Department/Program Chair, and the Graduate Dean must then approve such a plan.

#### Non-Thesis Plan

Degree requirements for the master's degree under this plan include the completion of a minimum of 30 semester hours of graduate coursework. Individual colleges and/or departments may have specific or additional requirements. A thesis is not required; however, a candidate working under this option may be required to participate successfully in a seminar or other courses for acquaintance with research methods and appreciation of the place and function of original investigation in the field. Credit hours in 699 do not count as acceptable coursework toward a non-thesis plan.

#### Transfer Credit

With permission from the major department, students may transfer up to 12 semester hours of acceptable graduate credit from an incomplete degree program earned in an approved institution and may count it toward a master's degree. No transferred credit may be more than 10 years old at the time of a student's graduation from

UAH. Such credit may be transferred with the approval of the major department if completed with a grade of B or better.

In some circumstances, a student may need to take a graduate course at another institution while enrolled in a UAH degree program. The transfer of such credit back to UAH must be approved by the department and by the Graduate Dean prior to the student enrolling at the other institution. (This does not apply to joint/shared programs with other institutions).

#### Time Limit

The degree must be earned within 10 years or by the end of the 30th semester. There are three semesters a year: Fall, Spring, and Summer. The time clock starts when the first course is taken (including transfer credit).

#### Application for Degree

All candidates for a master's degree must apply for the degree by submitting the [Application for Graduate Degree](#) and fee to the Registrar's Office at least three months before the degree is to be conferred. Consult the Graduate School [website](#) for specific deadline dates.

#### Final Examination

Candidates for a non-thesis master's degree may be required to take a final comprehensive examination or attain satisfactory performance (B or better) in a capstone course. Capstone courses must be designated as such by the department/program during the course approval process and be approved by the College Dean, the Graduate Council Curriculum Committee, the Graduate Dean, and the Provost. Final examinations for non-thesis candidates may be written, oral, or both.

Thesis option candidates must pass a final examination that includes an oral presentation of the thesis in the form of a seminar before the student's supervisory committee; the oral presentation is open to the members of the University community. Immediately following the oral presentation, the candidate will be examined by the committee in a closed meeting. The examination must be given within the semester in which degree requirements are to be completed, according to the dates set by the Graduate School. The results must be reported to the Graduate Dean within two working days. A written notice of the time and place of examination is sent to the Graduate Dean at least two weeks before the examination date. The Graduate Dean may appoint an additional member of the graduate faculty to act as an observer for each thesis defense. Once set, the examination becomes an official Graduate School matter; the date cannot be changed without prior arrangement among the supervisory committee members and the student, and without approval of the Graduate Dean.

After approval by the Graduate Dean, the department must send a copy of the written notice to the candidate and each member of the supervisory committee. A student may take the final examination no more than twice.

#### Thesis Submission

After the student has passed their thesis defense, and before the published deadline on the Graduate School [website](#), the thesis signature form (with supervisory committee, Department/Program Chair, and College Dean signatures) must be submitted to the Graduate School. Once the signature form is received, the Graduate School will contact the student with directions for creating an account in ProQuest. The student will upload the final thesis draft to ProQuest by the posted deadline on the Graduate School website and will then work with the UAH copyeditor to finalize the manuscript. All copyedits must be finished by noon on the last day of final exams before the published graduation date, or the student will not graduate in that semester. Theses must comply with the regulations set forth in the Graduate School's [Thesis, Dissertation, and DNP Project Manual](#). Upon completion of the copyediting process and the Graduate School's acceptance of a student's thesis, the Graduate Dean will sign the thesis signature form. All theses must be accessible to the general public. Detailed [procedures for submission](#) can be found on the Graduate School website. (<https://www.uah.edu/graduate/>) For specific questions call (256) 824-6055.

#### Late Submission

Students who miss the published deadlines but submit all required documents to the Graduate School by the end of the current semester will not graduate in the current semester; instead they will fall under the thesis deadlines of the subsequent semester. These students may qualify for a 0-credit-hour option the subsequent semester if the 0-credit-hour option is offered by their departments. Students may only take the 0-credit-hour option once and must consult with their Committee Chairs in order to register for the 0-credit-hour option. Before registering for the 0-credit-hour option, students must request approval from the Graduate Dean by emailing their request and an explanation of the extenuating circumstances to [GradStudent@uah.edu](mailto:GradStudent@uah.edu). All copyediting in ProQuest must be completed by noon on the last day of final exams, prior to the published graduation date in the

semester during which the student plans to graduate.

## Second Master's Degree

A student is permitted to apply no more than six semester hours of credit earned for one graduate degree toward an additional master's degree. Such permission is granted at the discretion of the major department and approved by the Graduate Dean.

## Summary of Checkpoints toward Completion of all Master's Degree Requirements

The following scholastic requirements are those of the Graduate School. Individual colleges and/or departments may list additional requirements.

1. Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program
2. No grade of D or F may be counted toward a graduate degree
3. At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above
4. In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH

The following checkpoints have been established to assist a student in proceeding from admission to graduation. Timely completion of these [forms](#), in sequence, will help to ensure that a student's degree program is in order.

**Program of Study (POS):** This [form](#) must be filed as early as possible and definitely before the completion of 18 semester hours. If a supervisory committee develops the program, the student should be invited to the committee meeting. Once approved, changes in the POS must be submitted on a Change of Program form and approved by the Committee Chair, Department/Program Chair, and Graduate Dean. A valid reason must be given for the change.

**Application for Graduate Degree:** This is to be filed at least three months before the end of the semester in which degree requirements are expected to be completed. The application is available on the Registrar's [website](#).

**Notification of Thesis Defense/Final Examination:** [Notification of the examination date](#) must be submitted to the Graduate School at least two weeks in advance of the examination. The examination must be given according to the [dates](#) published on the Graduate School website, and the results reported within two working days to the Graduate Dean before the end of the semester in which degree requirements are expected to be completed. The Graduate Dean may appoint an additional member of the graduate faculty to act as an observer for each thesis defense.

**Report of Thesis Defense/Final Exam:** Following the thesis defense/final exam, the supervisory committee shall submit a [signed report](#) to the Graduate School within two days.

**Thesis Signature Form:** The thesis signature form with supervisory committee, Department/Program Chair, and College Dean signatures must be submitted to the Graduate School by the deadline posted on the [website](#). After the signature form is received, the Graduate School will contact the student with directions for creating an account in ProQuest. The student will upload the final thesis draft to ProQuest by the Graduate School deadline, and then the student will work with the UAH copyeditor to finalize the manuscript. All copyedits must be finished by noon on the last day of final exams, prior to the published graduation date, or the student will not graduate in that semester.

## Degree Requirements, Undergraduate

### 1. Minimum Degree Requirements

- Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Science in Business Administration, Bachelor of Science in Economics and Computational Analysis, and the Bachelor of Arts or Bachelor of Science in Professional Studies have a minimum of 120 semester hours.
- Bachelor of Arts in Education or Bachelor of Science in Education have a minimum of 123 semester hours.
- Bachelor of Science in Nursing requires no less than 120 semester hours; different programs/tracks within the degree may require more than 120 semester hours.
- Bachelor of Science has a minimum of 120 semester hours.
- The Bachelor of Science in Aerospace Engineering, Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Computer Engineering, Bachelor of Science in

Electrical Engineering, Bachelor of Science in Industrial and Systems Engineering, and the Bachelor of Science in Mechanical Engineering have a minimum of 128 semester hours.

- Bachelor of Science in Optical Engineering requires 129 semester hours. (No students will be admitted after fall 2018).

2. A minimum of 25% of the total requirements and 12 of the last 18 semester hours must be completed at UAH.

3. Unless otherwise specified by the department involved, a minimum of 12 semester hours of upper-level courses numbered 300 or above must be completed at UAH in a student's program (6 semester hours in the major and 6 semester hours in the minor or cognate studies).

4. A minimum of 30% of the total degree requirements must be taken in courses numbered 300 or above (39 semester hours for a 128 semester hour requirement).

5. The maximum amount of correspondence or credit by examination allowed towards a bachelor's degree is 50% of the degree requirements.

6. An overall average of C is required for all courses taken at UAH; and in all courses in the major discipline taken at UAH; and in all courses in the minor discipline taken at UAH or in all courses listed in the cognate studies option taken at UAH.

7. A maximum of 50% of a degree program may be earned from a junior, community or two-year college. Requests for exceptions must be in writing and approved by the Dean of the College in which the student is enrolled.

8. Additional requirements for each degree are described in the appropriate sections of this catalog.

#### Time Limit

The degree requirements for graduation are normally those specified in the catalog in effect when a student first registers as a degree-seeking student at UAH. At any time during the student's enrollment that requirements for graduation are changed, a student may elect to graduate under the new requirements. If the student does not complete requirements for graduation within seven years from the date of entry or seven years from the date of the catalog chosen, the student must then change to the catalog in effect and meet the requirements as specified. If a student breaks enrollment for a period of at least 24 months, the student must then change to the catalog in effect at the time of re-enrollment and meet the requirements as specified. The student's advisor and college dean must approve any exceptions to this policy with the proper notation filed in the student's program of study in the Registrar's Office. At any point at which a change in catalog becomes necessary, a new program of study must be completed and proper notation filed in the Registrar's Office.

## Evaluation of Transfer Credit

The University of Alabama in Huntsville follows the practices specified in Transfer Credit Practices of Designated Educational Institutions, published by the American Association of Collegiate Registrars and Admissions Officers, in evaluating college-level courses from other recognized colleges and universities for the purpose of transfer of credit to UAH. Transfer credit evaluations will be completed as early as possible but no later than the first semester of enrollment.

Credits from an institution that is not yet accredited but has acquired candidate status from a regional accrediting agency are provisionally eligible for transfer to UAH. In order to obtain full credit for courses accepted as provisional credits, students must complete 30 semester hours at UAH and earn a "C" or better in each course attempted. Transfer credit will not be posted until this requirement has been met. Students with provisional credits should contact the Registrar upon completion of 30 semester hours at UAH.

Courses completed at unaccredited and non-candidate institutions are not accepted for credit at UAH. Credits for education completed in non-collegiate settings that have been evaluated and recommended for credit by the American Council on Education are accepted as transfer credit at UAH. As a member of Service Members Opportunity Colleges, UAH is committed to easing the transfer of relevant course credits and crediting learning from appropriate military training and work experiences.

The completion of the Freshman Writing/Composition requirement at another regionally-accredited college or university will satisfy UAH's Freshman Composition 6 credit-semester hour requirement (Freshman Composition I and II). For situations where this requirement was satisfied by less common approaches such as CLEP or credit by examination, please contact the chair of the English department.

#### Acceptance of transfer credit by the Office of the Registrar and application of credits to a specific

**degree program by the academic department are two separate and distinct processes. Consult an academic advisor for degree applicability within the desired degree program.**

Credits earned in quarter hours will be converted to semester hours on the basis of two-thirds of one semester hour for each quarter-hour.

An individual who enrolls as a non-degree student and later decides to work toward a degree must apply for admission as a degree-seeking student and request an evaluation of transfer credits. The application of such accepted credits to a particular program of study will be made and approved at the time of admission to the desired degree program.

## **Grading System**

The University of Alabama in Huntsville's grading system includes grades of A, B, C, D, F, I, X, W, S, U, P, AU, and N. Instructors have the option of augmenting the course grades of A, B, C, and D with symbols "+" and "-" signifying, respectively, high and low achievement within the assigned grade. These augmented letter grades become part of the student's permanent record and appear on transcripts, but an augmentation of a letter grade does not affect its value for the purposes of the GPA computation.



Grade	Description
A	Superior achievement. Four quality points given per semester hour.
AU	Audit. Course attendance as a listener. No credit given, no quality points assigned, no attendance requirement.
B	Above average achievement. Three quality points given per semester hour.
C	Average Achievement. Two quality points given per semester hour.
D	Passing work. One quality point given per semester hour.
F	Failing work. No credit given; no quality points assigned.
I	Incomplete. Assigned by the instructor when a student, due to circumstances beyond their control, has not satisfied some requirement of the course. The deadline for a student to remedy a grade of I is the last day of class of the next semester enrolled or one calendar year from the date of the grade whichever occurs first. If the grade of I is on a student's record at the time of graduation, it is treated as an F.
N	No grade. Assigned by the Office of the Registrar when the instructor does not report a grade.
P	Passing work. Assigned in some courses. See Pass-Fail Option.
S	Satisfactory work. Applicable to noncredit courses and to some specified credit courses, and will not be counted in the GPA.
U	Unsatisfactory work. Applicable to noncredit courses and to some specified credit courses.
W	Withdrawal. (See Withdrawal Policy.)
X	Excused absence from examination. Assigned by the instructor when a student completes all course requirements except the final examination. The final grade becomes an F unless the examination is completed by the time of the announced deferred examination date at the beginning of the semester of next regular enrollment of the student. (See Examinations and UAH calendar). Time schedule permits a student to take only one examination on this date. If a student receives more than one grade of X, he or she should make arrangements directly with other instructors for additional make-up examinations.

## Pass-Fail Option

### Undergraduate Students

An undergraduate student wishing to exercise a P-F option must [apply](#) to the Office of Registrar (SSB 120) when registering or before the end of the third week of classes. Any undergraduate student not on academic probation may take courses on a P-F basis. **P-F policies vary from college to college; consult your advisor before selecting this option.**

A student is limited to 12 semester hours of credit on a P-F basis over the course of the degree. Courses listed on the Program of Study (major, minor, cognate, track, cluster, specialization, option and concentration) may not be taken P-F. Required courses in English composition and mathematics, as well as the rest of the Charger Foundations, may not be taken P-F. Departments may limit the P-F to courses outside the department or college.

A grade of P may be changed to a regular grade only if the student changes their program to an area in which a regular grade is required. The change must be initiated at the college dean's office and must go through the normal grade change procedures. Once a P grade has been changed to a regular grade, the regular grade must



remain. Under the P-F system, a grade of P will not be counted in a student's grade-point average; a grade of F will be counted in a student's grade-point average.

Even though a student chooses to take courses on the P-F basis, instructor's grade sheets will reflect the regular grade and the student may be informed of the regular grade upon request.

Graduate Students

The Pass/Fail option is not available for Graduate Students.

## Residency Requirements

UAH Resident/Non-Resident Tuition Fee Guidelines Introduction

All students registering at The University of Alabama in Huntsville (UAH) who do not demonstrate, by presenting satisfactory evidence, that they are "resident students" will pay a "non-resident student" tuition. The residency classification of students will be made at the time of their initial registration and will continue unchanged through all subsequent registrations until satisfactory evidence to the contrary is submitted at the time of any subsequent registration.

An [Application for Reclassification of Residence](#) must be submitted to the Office of the Registrar no later than the last day of registration for the appropriate semester.

Demonstrating Alabama Residency

**A resident student, for the purposes of this policy, is one who has established residency in Alabama and has maintained that status for at least one year immediately prior to the date of registration at any institution of higher education in the state.** The policy of the Board of Trustees of The University of Alabama on non-resident tuition states that "residence" refers to that "single location at which a person resides with the intent of remaining there indefinitely as evidenced by more substantial connections with that place than with any other place." Students seeking to demonstrate that they are Alabama residents must certify to three facts:

1. that an address or location within Alabama is their residence,
2. that they intend to remain there indefinitely, and
3. that they have "more substantial connections" with Alabama than with any other state.

Though satisfying the location and statement of intent requirements are essential, demonstrating residency will depend upon the University's evaluation of the student's connections with the state. No single connection or combination will automatically result in a finding of residency. Moreover, even if one or more connections with Alabama exist, a person who is in Alabama primarily for the purpose of obtaining an education will be considered a non-resident. The Board policy lists the following as connections that may be considered:

1. Payment of Alabama state income taxes as a resident
2. Ownership of a residence or other real property in the state and payment of state ad valorem taxes thereon
3. Full-time employment (not temporary) in the state
4. Residence in the state of a spouse, parents, or children
5. Previous periods of residency in the state continuing for one year or more
6. Voter registration and voting in the state, especially registration occurring more than one year prior to the student's initial registration
7. Possession of state or local licenses to do business or practice a profession in the state
8. Ownership of personal property (e.g., automobile, boat, etc.) in the state and payment of state taxes thereon; possession of state license plates
9. Continuous physical presence in the state for a purpose other than attending school and except for temporary absences for travel, military service, temporary employment, etc.
10. Membership in religious, professional, business, civic, or social organizations in the state
11. Maintenance in the state of checking and savings accounts, safe deposit boxes, investment accounts, etc.
12. In-state address shown on selective service registration, driver's license, automobile title registration, hunting and fishing licenses, insurance policies, stock and bond registrations, last will and testament, annuities, retirement plans, etc.
13. Location within the state of the high school from which the student graduated

**As stated above, a student will be classified as an Alabama resident only if the student is able to**

**show that he/she became a resident one year or more prior to the date of registration at any institution of higher education in the state by identifying then existing, sufficient connections with Alabama.**

#### Demonstrating Alabama Residency - Alternative Approach

A student who does not qualify for classification as a resident student under the foregoing requirements may possibly qualify if he/she (or his/her supporting person in the case of a minor) meets any one of the following requirements at the time of registration:

1. Is a full-time, non-temporary employee at UAH or is the spouse of such an employee
2. Is employed by UAH as a graduate student or fellow on at least a 0.5 FTE (half-time) basis
3. Is a full-time, non-temporary employee of some other employer within the state of Alabama, or can verify such employment beginning not more than 90 days after registration, or is the spouse of such employee
4. Is a resident of Bedford, Coffee, Franklin, Giles, Lawrence, Lincoln, Marion, Marshall, or Moore County in Tennessee and has been a resident of that County for at least one year preceding the date of registration. The requirements for a student to demonstrate that he/she is a "resident" of one of the foregoing counties shall be the same as set forth above with regard to demonstrating Alabama residency.

As used in these Guidelines, a "minor" refers to an individual who, because of age, lacks the capacity to contract under Alabama law. This means a single individual under age 19 and a married individual under age 18. A "supporting person" refers to either or both of the parents of a student, if they are living together, or, if the parents are divorced or living separately, then the parent providing the greater amount of financial support of the two (normally, the parent having legal custody). "Non-temporary" employment means employment that is ongoing and not seasonal or for a specific period of time or for the express purpose of financing the student's college education.

Rules for Veterans and U.S. Service Members of the Uniformed Services (Army, Navy, Air Force, Marine Corps and Coast Guard) and commissioned officers of NOAA and the PHS

The following individuals shall be charged a rate of tuition not to exceed the in-state rate for tuition and fees purposes:

- Anyone using educational assistance under the Survivors' and Dependents' Educational Assistance Program (Chapter 35), also be charged the resident rate as outlined in Public Law 117-68. Effective for courses and terms beginning after August 1, 2022.
- A Veteran using educational assistance under either chapter 30 (Montgomery G.I. Bill® - Active Duty Program) or chapter 33 (Post-9/11 G.I. Bill), of title 38, United States Code, who lives in Alabama while attending a school located in Alabama (regardless of his/her formal State of residence).
- Anyone using transferred Post-9/11 GI Bill benefits (38 U.S.C. § 3319) who lives in Alabama while attending a school located in Alabama (regardless of his/her formal State of residence).
- Anyone described above while he or she remains continuously enrolled (other than during regularly scheduled breaks between courses, semesters, or terms) at the same school. The person so described must be using educational benefits under either chapter 30 or chapter 33, of title 38, United States Code.
- Anyone using benefits under the Marine Gunnery Sergeant John David Fry Scholarship (38 U.S.C. § 3311(b)(9)) who lives in Alabama while attending a school located in Alabama (regardless of his/her formal State of residence).
- Anyone using transferred Post-9/11 G.I. Bill benefits (38 U.S.C. § 3319) who lives in Alabama while attending a school located in Alabama (regardless of his/her formal state of residence) and the transferor is a member of the uniformed service who is serving on active duty.
- Anyone using educational assistance under chapter 31, Vocational Rehabilitation/Employment (VR&E), also be charged the resident rate. Effective for courses and terms beginning **after March 1, 2019**, a public institution of higher learning must charge the resident rate to chapter 31 participants, as well as the other categories of individuals described above. When an institution charges these individuals more than the rate for resident students, VA is required to disapprove programs of education sponsored by VA.
- The policy shall be read to be amended as necessary to be compliant with the requirements of 38 U.S.C. 3679(c) as amended.

*GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at <https://www.benefits.va.gov/gibill>.*

#### Visiting Student Program

A cooperative arrangement exists with Alabama A&M University, Calhoun Community College, Oakwood University, and The University of Alabama in Huntsville. Under this arrangement, a student at any of the

participating institutions may request permission to attend a course at one of the other schools. Conditions governing the granting of permission include the following:

1. The student must be a full-time student or a full-time University employee who is a part-time student. The semester hours to be taken at the host institution shall be counted in determining the full time or part-time status of the student.
2. The course desired must be unavailable at the student's home institution.
3. Visiting students are normally limited to one undergraduate course a semester at the host institution except where the second course is a laboratory required to accompany the first course or the second course is a one-semester-hour course in basic military science.
4. The student must have an overall C average, and meet all prerequisites of the host institution.
5. The student's request must be approved by his or her advisor and other appropriate personnel.
6. Students will be admitted by the host institution to a course based upon availability of space for the visitor, to be determined by the class enrollment on the last day of regular registration.

Any student interested in participating in the Visiting Student Program should contact the [Registrar's Office](#) for information regarding the procedures to be followed.

## Graduation and Commencement

### Application for Graduation

Candidates for graduation must file their application at least one semester prior to the time requirements are expected to be completed. Deadlines are announced each semester and application forms may be obtained at <http://www.uah.edu/registrar/commencement/apply-to-graduate>. Early application will assist the student by confirming requirements remaining to be completed. Requirements must be completed and certified prior to the published deadline. Diplomas are issued at the end of each semester or during commencement ceremonies.

#### Total Degree Requirements - Undergraduate Students

##### 1. Minimum Degree Requirements

- Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Science in Business Administration, and the Bachelor of Science have a minimum of 120 semester hours.
- Bachelor of Arts in Education or Bachelor of Science in Education have a minimum of 123 semester hours.
- Bachelor of Science in Nursing requires no less than 120 semester hours; different programs/tracks within the degree may require more than 120 semester hours.
- The Bachelor of Science in Aerospace Engineering, Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Computer Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Industrial and Systems Engineering, and the Bachelor of Science in Mechanical Engineering have a minimum of 128 semester hours.
- Bachelor of Science in Optical Engineering requires 129 semester hours. (No students will be admitted after fall 2018).

2. A minimum of 25% of the total requirements and 12 of the last 18 semester hours must be completed at UAH.

3. Unless otherwise specified by the department involved, a minimum of 12 semester hours of upper-level courses numbered 300 or above must be completed at UAH in a student's program (6 semester hours in the major and 6 semester hours in the minor or cognate studies).

4. A minimum of 30% of the total degree requirements must be taken in courses numbered 300 or above (36 semester hours for a 120 semester hour requirement, 39 semester hours for a 128 semester hour requirement).

5. The maximum amount of correspondence or credit by examination allowed towards a bachelor's degree is 50% of the degree requirements.

6. An overall average of C is required for all courses taken at UAH, and in all courses in the major discipline taken at UAH, and in all courses in the minor discipline taken at UAH, or in all courses listed in the cognate studies option taken at UAH.

7. A maximum of 50% of a degree program may be earned from a junior, community, or two-year college. Requests for exceptions must be in writing and approved by the Dean of the College in which the student is enrolled.

8. Additional requirements for each degree are described in the appropriate sections of this catalog.

## Total Degree Requirements - Graduate Students

1. Minimum Degree Requirements
  - Masters Degree: Minimum 30 hours
  - Doctoral Degree: Minimum 48 hours
  - Total hours vary by program
2. Overall grade point average must be B (3.000) or better on all graduate credit hours at UAH. In addition, the grade point average must be B (3.000) or better on courses taken in the current graduate degree program.
3. No grade of D or F may be counted toward a graduate degree.
4. At least 30 percent of the hours required for a graduate degree must be completed in courses numbered 600 or above.
5. A majority of the credit hours (including dissertation credits) toward a doctoral degree must have been earned at UAH (or, in the case of joint/shared programs, at the participating institutions).
6. In the case of joint/shared programs, at least 33 percent of all hours earned for a degree must be earned at UAH.

## Completing Your Graduate Degree (JUMP)

- Students are admitted into their pathway graduate program upon earning their bachelor's degree, successfully completing their JUMP courses, and signing a letter accepting their status as a graduate student. This letter is sent to them by UAH Graduate Admissions when they have completed all undergraduate requirements.
- Graduate programs may require additional application materials.
- All coursework must be completed within six years of taking the first JUMP course.
- Students who do not complete their coursework within the defined time period or who do not meet any other pre-specified JUMP admissions criteria will have to apply to the graduate program through the normal admissions process. The JUMP graduate courses taken as an undergraduate will not count towards the graduate degree.

More information is available at <http://uah.edu/jump>

## Graduation with Honors

### Undergraduate Students

Graduation with honors at the baccalaureate level requires a minimum of 60 semester hours at UAH. Honors will be determined by the GPA for the last 60 semester hours of coursework taken at UAH or the overall GPA for all coursework taken at UAH, whichever is higher. The academic terms containing the last 60 semester hours of coursework taken at UAH will be identified and the GPA of all UAH courses taken during those terms to satisfy graduation requirements will be computed and the honors will be determined as follows:

- If the GPA computed as above is 3.90 or above, the student graduates summa cum laude.
- If the GPA computed as above is 3.70 or above (but below 3.90), the student graduates magna cum laude.
- If the GPA computed as above is 3.40 or above (but below 3.70), the student graduates cum laude.

### Graduate Students

Graduation with honors at the masters and doctoral levels are not permitted.

## Time Limit

### Undergraduate Students

The degree requirements for graduation are normally those specified in the catalog in effect when a student first registers as a degree-seeking student at UAH. At any time during the student's enrollment that requirements for graduation are changed, a student may elect to graduate under the new requirements. If the student does not complete the requirements for graduation within seven years from the date of entry or seven years from the date of the catalog chosen, the student must then change to the catalog in effect and meet the requirements as specified. If a student breaks enrollment for a period of at least 24 months, the student must then change to the catalog in effect at the time of re-enrollment and meet the requirements as specified. The student's advisor and

college dean must approve any exceptions to this policy with the proper notation filed in the student's program of study in the Registrar's Office. At any point at which a change in catalog becomes necessary, a new program of study must be completed and proper notation filed in the Registrar's Office.

#### Graduate Students The Master's Degree

The degree must be earned within 10 years or by the end of the 30th semester. There are three semesters a year; fall, spring, and summer. The time clock starts when the first course is taken (including transfer credit).

#### The Doctoral Degree

The doctoral degree must be earned within 10 years (or by the end of the 30th consecutive semester, where consecutive semesters are fall, spring, and summer). The clock starts when the graduate program's first credits are completed (if credits are transferred in, then the clock starts on the date the student is accepted into the program. All requirements must be completed no more than five years (or fifteen consecutive semesters) after the student has passed the qualifying examination. Failure to meet this time requirement requires the student to take and pass another qualifying examination and (if required by program) another implementation review.

## Records and Right to Privacy

### Confidentiality of Student Records

The Family Educational Rights and Privacy Act of 1974 (FERPA) is a federal law that protects the confidentiality of student education records. To implement FERPA, the University has formulated and adopted a written institutional policy governing the handling of these records.

The term "[education records](#)" under FERPA includes generally any record, whether in a printed, handwritten, audio, video, or computer media format, maintained by the University and containing information related to a student in their role as a [student](#). Certain records are, however, excluded by FERPA from this broad definition, such as those made by instructional, supervisory, and administrative personnel and kept in their sole possession, those made by campus police, and those made by a physician or other professional medical personnel in connection with treatment of the student.

Under FERPA and University policy, a student has a right of access to their education records and may inspect and review the information contained in them. To exercise this right, the student should present a request to the University office where the record is located, and a response will be made no later than 45 days later. In certain cases, a copy of the record may be provided, with a copying fee, as an alternative to actual inspection. Some records are not within this right of review, such as financial information from the student's parents and confidential letters or statements of recommendation where the student has waived the right of access.

A student who believes their education records contain information that is inaccurate, misleading, or in violation of their privacy rights may bring the matter to the attention of the appropriate records official. If by informal discussion with this official the student does not obtain the corrective action desired, the student will then be entitled to a hearing at which they may challenge the objectionable item. Additional information about hearing procedures will be given to the student at that time. The decision of the hearing official or panel shall be final. If the decision is adverse to the student, they may insert in the education record an explanatory statement about the disputed item.

A student's privacy interest in the education record is further protected by the rule against unauthorized disclosure. Generally, the University may not, without the student's consent, release the education record or [personally identifiable information](#) in it to other individuals or entities.

Disclosure in certain circumstances, however, is specifically excepted by FERPA from the foregoing rule. These circumstances include disclosure to certain parties—University personnel who have a legitimate educational interest in the information, officials of institutions where the student is seeking to enroll, parties to which the student is applying for financial aid, the parent of a dependent student, etc.; disclosure to comply with a judicial order or lawfully issued subpoena; or disclosure in connection with a health or safety emergency. Under the first exception, "[University personnel](#)" includes any UAH employee, and a "[legitimate educational interest](#)" means that the employee has a need for access to the record to perform appropriate tasks clearly within the area of responsibility of the employee, to perform a task related to the education or discipline of the student, or to provide a benefit or service relating to the student. Personally identifiable information will be transmitted by the University under these exceptions only upon the condition that the recipient not permit any other party to have access to it without the student's consent.

The University may also release what is called "[directory information](#)" without obtaining the student's consent.

Directory information is limited to the following: the student's name, address (local and permanent), telephone number, e-mail address, date and place of birth, enrollment status (full-time or part-time), major field of study, participation in officially recognized activities and sports, dates of attendance, degrees and awards received, the previous educational institution most recently attended, and a photograph of the student. However, a student may prevent the release of even this information, if they wish, by completing a form provided for this purpose in the Registrar's Office.

Any student who believes that the University has violated their rights under FERPA may notify and request assistance from the Provost and Executive Vice President for Academic Affairs. The student may also file a complaint with the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue, SW, Washington, DC 20202-5920.

## **Ownership of Submitted Admissions Documents**

All credentials and documents submitted become the property of The University of Alabama in Huntsville. The originals or copies of the originals will not be returned to the applicant or forwarded to another institution, agency, or person.

## **Transcripts**

Official Transcripts are issued by the UAH Registrar's Office and bear the University seal and Registrar signature. Official Transcripts are not processed if the student has an outstanding obligation, financial or otherwise.

The [National Student Clearinghouse](#) (NSC) is authorized to provide transcript ordering online. The NSC provides an online ordering service for UAH students and alumni, available 24 hours a day, 7 days a week. Online orders for PDF or Electronic Exchange are typically processed within 20 minutes, however, the processing time could be longer during peak request season.

In addition to PDF or Electronic Exchange Official Transcripts, you can also use the NSC to request paper copies to be mailed, sent overnight, or held for pickup in our office.

## **Student Account and Fees**

### **Billing and Payment Procedure**

Tuition, fees, and all associated charges are to be paid in full by the first official day of the semester (click [here](#) to find the first official day of the semester). Acceptable forms of payment are:

- Cash
- Personal Checks
- Money Orders
- Cashier's Checks
- Traveler's Checks
- Electronic Checks
- Credit Cards/Debit Cards (VISA, MasterCard, American Express, or Discover - 2.85% service fee applies)

Payments may be made online through the student account or in person at the Bursar's Office (SSB 123). Students who do not pay their bill in full or have an active payment plan by the first day of the semester are assessed a \$50.00 late fee and a transcript hold may be placed on the account. Students who have any remaining balance on the last official day of the semester will be dropped from any future semester registration and an AR hold will be placed on the account. The University assumes no responsibility for students who attend classes without official enrollment. For summer sessions, please check dates in the [Academic Calendar](#).

Mail your direct check payments or 529 payments to the following address:

*(Do NOT include Scholarship or Third Party payments)*

**Dept# 6564  
University of Alabama in Huntsville  
PO Box 11407  
Birmingham, AL 35246-6564**

Payment Plans

Payment plans are available to students each semester. UAH partners with Flywire Payment Solutions to offer student payment plans. For more information, or to set up an installment plan, [click here](#).

#### Balances

Past due balances are a debt owed the State of Alabama and appropriate action will be taken to collect all balances. Holds will be placed on all student accounts that have past due balances. This hold prevents students from receiving grades and transcripts and from registering for another semester at UAH. To the extent permitted by the laws of the State of Alabama, any costs to collect a past due account, to include collection agency charges and attorney fees, will be charged back to the student who shall be liable for payment of those charges.

#### Other Charges

<b>Other Charges</b>	
Credit by examination or validation	\$10.00/semester hour
Replacement of I.D. card	\$25.00
Transcript	\$10.00
Graduation Application fee (non refundable)	\$50.00
Duplicate Diploma	\$40.00
Parking Permit	\$140.00
Summer-only vehicle registration	\$50.00
<b>College of Nursing</b>	
Nursing Badge	\$5.00
Liability Insurance (per year)	variable
College of Nursing Pin (graduation)	\$50.00-\$150.00
Annual health examinations	variable

#### Refunds

Students may drop a class through the Drop/Add period and receive a 100% tuition refund. Please check the [UAH website](#) for each semester's dates. A student desiring to drop one or more classes may do so on the UAH online registration site or by submitting a drop request form to the Registrar's Office, SSB 120. The date of the drop request is the date the written request is received at the Registrar's Office.

### Tuition and Fees

[Tuition and fee information is found on the UAH website.](#)