1993-1994 Catalog

The University of Alabama in Huntsville

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Undergraduate Catalog 1993-1994

The University of Alabama in Huntsville is committed to equal opportunity in employment and education. The University does not discriminate in any program or activity on the basis of race, color, religion, sex, age, or national origin, or against qualified handicapped persons, and it maintains an affirmative action program for protected minorities and women.

Although this catalog intends to reflect currently any policies or rules of The Board of Trustees of The University of Alabama referred to or incorporated herein, users are cautioned that changes or additions to such policies, rules, tuition and fees may have become effective since the publication of this material. In the event of such a conflict the current statements of Board policy contained in the official minutes and manual of rules, by-laws, and guidelines shall prevail.

The University of Alabama in Huntsville also reserves the right to modify its institutional policies from time to time. Students enrolling in the University are subject to current policies and rules as contained herein and as subsequently stated or modified by official institutional action.
Contents

Calendar ................................................................. 3
General Information .................................................. 5
Student Information .................................................. 9
Admissions Information ............................................. 30
Financial Information ............................................... 37
Academic Information ............................................... 47
College of Administrative Science ......................... 71
College of Engineering ........................................... 102
College of Liberal Arts ............................................ 130
College of Nursing .................................................. 201
College of Science .................................................. 207
School of Primary Medical Care .......................... 250
Library .................................................................. 257
Division of Continuing Education ....................... 259
Board of Trustees .................................................... 263
Administration ....................................................... 264
Faculty .................................................................. 265
Index .................................................................... 308
The UAH Term System

UAH has four identical terms, each spanning ten weeks plus an examination week. Credit for course work is granted in standard semester hour units.

ACADEMIC CALENDAR 1993-94

Fall Term 1993

Labor Day Holiday .................................................. September 6, 1993
Registration .......................................................... September 16
First Saturday Class ............................................... September 18
Classes Begin ......................................................... September 20
Last Saturday Class ............................................... November 20
Last MW Class ....................................................... November 24
Thanksgiving Holiday ............................................. November 25-26
Last MWF Class ....................................................... November 29
Last TT Class ........................................................ November 30
Study Day ............................................................. December 1
Exams ................................................................. December 2, 3, 6, 7
Commencement ...................................................... December 12
Christmas Holidays ............................................... December 23-24
Study Day ............................................................. December 27-31
New Year’s Holiday ................................................ January 3, 1994

Winter Term 1994

Registration .......................................................... January 4, 1994
Classes Begin ......................................................... January 5
First Saturday Class ............................................... January 8
Martin Luther King Holiday ..................................... January 17
Last Saturday Class ............................................... March 12
Last TT Class ........................................................ March 15
Last MWF and MW Class ......................................... March 16
Study Day ............................................................. March 17
Exams ................................................................. March 18, 19, 21, 22

Spring Term 1994

Registration .......................................................... March 25, 1994
First Saturday Class ............................................... March 26
Classes Begin ......................................................... March 28
Memorial Day Holiday ........................................... May 30
Last TT Class ........................................................ June 2
Last MWF and MW Classes ..................................... June 6
Study Day ............................................................. June 7
Exams ................................................................. June 8, 9, 10, 13
Commencement ..................................................... June 18
Summer Term 1994

8 Week Term:

Registration........................................June 17, 1994
First Saturday Class.................................June 18
Classes Begin.......................................June 20
Independence Day Holiday..............................July 4
Last Saturday Class................................August 6
Last TT Class......................................August 11
Last MWF and MW Class.............................August 15
Study Day...........................................August 16
Exams................................................August 17, 18, 19

Starting with the Fall, 1994, The University of Alabama in Huntsville will be on an Early semester system.
The University of Alabama in Huntsville is a campus of The University of Alabama System. It is a teaching and research institution dedicated to excellence in the promotion of the intellectual, technological, and economic enhancement of the state, region, and nation. The University offers a wide range of academic and professional majors at the bachelor's and master's levels and a specialized selection of doctoral level programs.

The University is committed to developing a faculty of the highest quality, and to providing an environment which facilitates its continued intellectual and professional growth. The University faculty is, in turn, committed to stimulating the intellectual development of its students.

The institution recognizes its responsibility to prepare its students to take leadership roles, think creatively and critically, and communicate clearly; to respect knowledge and the pursuit of truth; and to engage in the challenge and pleasure of a lifetime of learning. Because of its location in a technologically oriented major population center, UAH offers educational opportunities for traditional students and those individuals who are beyond the traditional college age.

UAH recognizes its responsibilities to the Huntsville community and the surrounding region, one of the nation's key centers for governmental and industrial advanced technological research. In meeting those responsibilities, the institution provides unusual opportunities for new and creative programs, especially in science, engineering, primary care medicine, and related areas. One of the distinguishing characteristics of UAH is its sustained core of basic and interdisciplinary research, augmented by its research centers which focus on areas of national high priority. Both the research activities and classroom experiences at UAH are supported by contemporary computer technology.

Through the excellence of its academic programs, faculty research and student support activities, UAH provides unique opportunities for the personal and professional development of each student. UAH, through its graduates and its programs, aspires to contribute to the economic advancement, cultural enrichment, and quality of life.

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 in physics and engineering were initiated in 1971. In 1973 UAH received its first residents in family practice and its first medical students taking electives toward their M.D. degree from the University of Alabama School of Medicine. UAH's first full-time medical students began their core clinical experience at the Huntsville component of the University of Alabama School of Medicine in the fall of 1974.

This brief chronology indicates that the programs at UAH are still in the developing stages, a characteristic of viable programs in any university. UAH was brought into being to meet the specific needs of a scientific and technological enterprises and the cultural and intellectual needs of a rapidly expanding region. Since UAH is new, it is relatively unfettered by tradition and patterns of established practice. 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

UAH is accredited by the Southern Association of Colleges and Schools. Academic programs in chemistry, computer science, engineering, nursing, and emergency medical technology are accredited by their respective accrediting associations. See program sections of the catalog.

Facilities

The 337-acre UAH campus is in northwest Huntsville adjacent to Cummings Research Park. The 20 university buildings, all of which have been constructed since 1960, contain modern equipment and exemplify modern functional design. The 10-acre medical campus is in the downtown medical district and provides two modern buildings for medical education and patient health care.

Morton Hall, which is the oldest building on campus, houses classrooms, computer laboratories, and offices for the Dean and several of the departments in the College of Liberal Arts. It also houses the offices of Multicultural Services and the Institute for Science Education.

The Science Building contains classrooms, computer laboratories and instructional laboratories for programs in biological, environmental, and physical sciences as well as offices for the Department of Biological Sciences. The Division of Continuing Education also has offices, classrooms, and computer laboratories in the building to support their programs.

The Kenneth E. Johnson Research Center contains research laboratories and offices for that Center, the Alabama Solar Energy Center, and the Center for Robotics.

Madison Hall contains executive administrative offices, classrooms, and the Department of Mathematical Sciences.

The Research Institute contains offices for Research Administration, and offices and research laboratories for the Center for Microgravity & Materials Research. Additionally, it houses the University’s mainframe computer facility and the Office of the State Climatologist.

The Engineering Building contains classrooms, computer laboratories, and instructional and research laboratories as well as offices for the Dean and the various engineering departments that comprise the College of Engineering.

The newly constructed Materials Science Building contains offices, classrooms, and state of the art research laboratories for programs in chemistry and materials science, as well as administrative offices for the Dean of the College of Science and the Dean of the School of Graduate Studies. It also has a large auditorium/lecture hall that will set 350 people.

The new Optics Building is a four-story building designed and constructed for research and graduate studies in the field of applied optics. The building contains research laboratories, clean rooms, meeting rooms, and offices for the Center for Applied Optics and the Department of Physics.

The contemporary University Center houses the Division of Student Affairs, the Office of Admissions and Records, the Academic Advisement and Information Center, Career Planning and Placement Office, Cooperative Education Office, University Bursar’s Office, Student Government Association, the Office of Testing Services, Wellness Center and Exponent. It has facilities for dining, assemblies, meetings, dramatic presentations and recreational activities as well as housing the University Bookstore.

The Frances C. Roberts Hall, a two-unit complex, contains classrooms, laboratories, and offices for the art, history, and music departments in the College of Liberal Arts. It also contains a large auditorium/lecture room for varied university programs.

The College of Nursing Building is a contemporary triangular structure that houses the College of Nursing. Its four levels contain administration and faculty offices, classrooms, an auditorium, laboratories and service areas, and a large and well equipped Learning Resources Center.
The modern Administrative Science Building contains classrooms, computer laboratories, and offices for the Dean and the departments of the College of Administrative Science. This well designed teaching facility also has a large auditorium/lecture hall and several student lounge areas.

The Computer Science Building is located across Sparkman Drive from the other campus facilities and contains offices and computer classrooms and laboratories for the Computer Science Department as well as computer classrooms for the Division of Continuing Education.

The Alumni House houses the offices of alumni affairs, development, and governmental relations of the Office of University Advancement.

Marion Beime Spragins Hall has classrooms and offices for Health and Physical Education and Athletic Department faculty and staff, a, gymnasium with a seating capacity of 2800, a swimming pool, racquetball courts, and other physical education and recreational facilities.

The Central Receiving and Shipping Building houses the shipping and receiving office and storage facility, the central mail room, and telephone services.

The Physical Plant Building contains offices, shops, and storage areas for the Physical Plant Department, which include administrative offices, custodial services, campus police, campus safety, maintenance, grounds services, stockroom and the University motor vehicle pool.

The Tom Bevill Center has 100 hotel rooms, a restaurant, offices for the U.S. Army Corps of Engineers Training Division, meeting rooms, and computer labs. It also has sophisticated audio-visual systems, computer networking, links to Huntsville's new super computer and easy access to other facilities on campus and in the nearby Cummings Research Park.

The WLRH Radio Station facility is located on the south end of the University campus and houses public radio station WLRH-FM. The University leases the facility to the Alabama Educational Television Commission but has no involvement in the operation of the radio station.

The Printing Services Building houses the printing services department and provides offices, darkrooms, print shop, and other special facilities to meet the University's printing needs.

The Clinical Science Center in the downtown medical district contains the School of Primary Medical Care administrative offices and academic support services, including the Health Sciences Library and the Office of Audio-visual and Production Services. The building is the headquarters for the school's medical students, continuing medical education, and emergency medical technician-paramedic training programs. It contains classrooms, faculty offices, and research laboratories, and an auditorium.

Adjacent to the Clinical Science Center is the UAH Medical Clinics building, which houses patient care services in family practice (the UAH Family Practice Center), internal medicine, obstetrics and gynecology, pediatrics, and psychiatry, as well as patient education services, clinical-support services, faculty offices, and the administration of the UAH-Huntsville Hospital Family Practice Residency Program. The Veterans Administration also has offices and patient care facilities in the building to provide health care services for the veterans of the north Alabama area.

Library

The UAH Library supports the academic and research programs of the University. It has a collection of 393,467 volumes along with collections of U.S. Government Documents, sound recordings, materials in microform and microfiche, and manuscript collections designed to support the efforts of students and faculty. In addition, the library currently receives almost 3,156 periodicals. For students in the social sciences and humanities, microfiche collections such as the Evans Imprint series and the Library of American Civilization and slide collections on Afro-American art are of particular value. For students in the sciences, work at UAH is supported by the Redstone Scientific Information Center which is located five miles from campus. This
library was developed to support the wide-ranging research interests of NASA and the United States Army Missile Command, and its collections of 351,967 volumes and 6,596 journal subscriptions along with more than 1.9 million research reports make it one of the finest scientific libraries in the southeast. It is available without charge to faculty members and graduate students of the University. Reciprocal borrowing agreements are also in force with Alabama A&M University and the University of North Alabama to allow UAH students free access to those libraries.

The library is also a member of several consortia that are designed to bring research materials not otherwise available to campus. Its membership in OCLC, the Network of Alabama Academic Libraries, and Alabama Library Exchange all are designed to facilitate rapid interlibrary loan service to students without charge.

Library services, including study rooms, orientations for classes, and on-line bibliographic database searching, are designed to assist in the research effort. The library catalog is available on-line from any terminal attached to the University computer or through dial access.

A library handbook detailing individual services of the library is available without charge at the library’s reference desk.

The University Noojin House

Built in 1950 as the private residence of F. Kenneth Noojin, the house became available to the community through acquisition by the University of Alabama Huntsville Foundation, which in turn gave the facility to the University. The house is available for receptions, conferences, luncheons, parties, and workshops. The faculty, staff, students and community are encouraged to utilize this gracious facility.
Student Information

Student Affairs

The Division of Student Affairs provides services to individual students which facilitate the student's attainment of academic, cultural, social and personal goals. It also coordinates and supports group activities and campus events that enhance the quality of student life at the University. The Division of Student Affairs also supports Student Government Association activities and programs, as well as interprets and administers the Student Judicial Code, which protects student rights and assists students in their awareness of student responsibilities. These student needs and interests are served by the university center, housing, athletics, club sports, student life, auxiliary services, career planning and placement, intramurals, student development programs and leadership training.

Tutoring Services

Tutoring services in academic subjects such as mathematics, English, chemistry, foreign languages, computer science, physics, and engineering are available through the Student Development Services Office located in the University Center, Room 113. The services are free to all UAH students. Students desiring to tutor or be tutored may call 895-6203 for information or make application at UC 113.

Counseling Services

Personal counseling is available to all UAH students through the Student Development Services Office. In keeping with accepted professional practice, all counseling is confidential. No information is released to University officials, faculty members, parents or outside agencies without the explicit authorization of the student, except when required by law. Students may be referred by faculty or staff members or they may contact the Student Development Services office directly, 895-6203.

Services for Students with Disabilities

The Student Development Services Office provides a professional counselor for students with disabilities.

The services offered to disabled students include: priority registration during advance registration periods, classroom accommodations, assistance locating note-takers and readers, ordering textbooks on tape, counseling, a quarterly student newsletter, student support group, auxiliary equipment, assistance during orientation, liaison to UAH faculty, free tutors for most subjects, liaison to Admissions, Housing and Financial Aid Offices, UAH accessibility guide and maps, resource library of disability information and liaison to community resources.

In addition, the staff provides educational "Awareness" programs for students, faculty and staff as well as inservice faculty training on accommodating students with disabilities.

Before enrolling, disabled students are encouraged to visit this office so that staff can be prepared to provide assistance needed. Appointments may be made in person or by calling the SDS office, Room 113, University Center, voice/TDD 895-6203.

Multicultural Affairs

The Office of Multicultural Affairs assists the University in providing an atmosphere that is welcoming, supportive and rewarding as students prepare to become responsible adults. Students will be encouraged to achieve and be aided in attaining academic excellence while learning to be competitive with their peers. OMA endeavors to foster an understanding and a respect for cultural diversity throughout the UAH community. Programs are being designed for
minority as well as non-minority students in order to promote a sense of community and an acceptance of multiculturalism and racial tolerance on the UAH campus. Students may contact the Office of Minority Affairs in Morton Hall, Room 222, or telephone (205) 895-6822.

Medical Services

UAH students who need a family physician may become patients of the UAH Family Practice Center by going to the UAH Medical Clinics in the Huntsville Medical District to complete the intake forms. All UAH students registering as patients are required to have valid UAH identification cards. UAH Medical Clinics office hours are 8 a.m. to 5 p.m. Monday through Friday. Appointments may be made by phoning 536-5511.

All patient care services provided by UAH School of Primary Medical Care are on a fee-for-service basis.

UAH Wellness Center

UAH students with minor illnesses and injuries may be seen at the Wellness Center located in the University Center with check-in in Room 113. Walk-ins and appointments are welcomed.

The basic charge is covered in the student health fee; however, laboratory costs will be billed to the student at a modest charge. The Wellness Center is open Monday through Friday 8:00 a.m. to 4:45 p.m. The telephone number is 895-6775.

Career Services

The Office of Career Services provides developmental and educative services which assist students in identifying their individual capabilities, interests, skills, and acquired knowledge, and to relate these characteristics to meaningful vocational options. This office communicates career, occupational, and employment information to the University as a whole, and interprets options available to students within graduate school, business, government, education, and nonprofit organizations. The culmination of these activities is placement counseling and referral to employers or graduate schools.

The Office of Career Services offers the following services to UAH students actively pursuing a degree and UAH graduates; part-time employment referral within the community of Huntsville and surrounding areas for currently enrolled students; full-time placement referral and on-campus interviews for graduating seniors, students currently enrolled in a graduate degree program, and graduates; career planning assistance with professional staff; a career exploration class, ED 111, offered each winter and summer; workshops to develop skills in resume writing, interviewing, and job search planning; use of the SIGI PLUS computer-assisted guidance system to assess interests, abilities, and values and relate these characteristics to 426 occupations; access to a computerized guidance information system with occupational and college information through Montgomery; a Career Resource Center of occupational information, company literature, salary information, and graduate school information; lists of job openings throughout the United States; and a Career Fair and Job Fair each Fall and Spring.

A credential file which includes 10 resumes, an authorization form, and a candidate registration form is established for each senior, graduate student (currently enrolled in a degree program), or UAH graduate who registers with this office. Each registered person receives a monthly newsletter, "Career Directions," which provides current employment trends, job hunting hints, and the monthly on-campus recruitment schedule.

Students may register for any of the services at the Office of Career Services, 212 University Center. Appointments may be made with staff members by calling 895-6612 between 8:15 a.m. and 5:00 p.m., Monday through Friday.
University Housing

The University of Alabama in Huntsville offers a variety of housing facilities to meet the needs of its diverse student population. All first-year and sophomore students who apply for University housing are assigned to the new Central Campus Residence Hall, which opened in the fall of 1991, as are upperclass students who request a private room. This seven-story traditional residence hall in the center of campus is connected to the University Center by an enclosed walkway. It is close to the library, the gym, and to classrooms for liberal arts, nursing, administrative science, and natural sciences. Each CCRH resident has an air-conditioned, carpeted private room in a four-person suite and shares a bath with one other suitemate. Suites are furnished with a mini-kitchen (small refrigerator, microwave oven, and sink), study table and chairs, small sofa, and easy chairs. Each student room has an extra-long twin bed, a wardrobe, a desk, a bookshelf, and a three-position study chair. Rooms for disabled students are available. Access to the building is by electronic card. Laundry facilities, a recreation room, a study room, and mail service are available in the hall. The "bridge" to the University Center provides all-weather access to the cafeteria, a convenience store, the game room, the bookstore, and various student activities, offices, and meeting rooms.

Upperclass students who prefer to have a roommate (double-occupancy rooms) and graduate students are assigned to three-bedroom suites in Southeast Campus Housing. Student families with children are also assigned to three-bedroom apartments in this area. Southeast Housing is a cluster of nine three-story residences located on South Loop Road near Madison Hall and most engineering and science classrooms. The one-bedroom units in Southeast are reserved for graduate students and families without children. Each three-bedroom unit has a living room, full kitchen with refrigerator, range, oven and sink, dining area, and double bathroom with an adjoining vanity area. The units are air-conditioned, carpeted and are furnished with a loveseat, lounge chairs, end tables, and a dining table and chairs. Bedrooms have extra-long twin beds, study desks and chairs, nightstands, and a built-in closet. Some unfurnished units are available. Several of the one-bedroom apartments are accessible to disabled students. All Southeast Campus Housing residents have the use of a laundry room with coin operated washers and dryers and pay telephones, a mailroom, and a study lounge. Ample parking is available in the large lot east of the residences. A sandpit volleyball court in the center of the Southeast complex and grassy fields surrounding the area provide recreational spaces for residents.

Central Campus Residence Hall has a Hall Director and, on each floor, a student Resident Advisor (RA); Southeast Campus is staffed with a team of RA's. These staff members and RA's develop activities and programs, provide assistance to student residents, and help create a residential community that contributes to effective student learning, personal and social growth, and responsibility.

Anyone admitted as a student to UAH is eligible for University Housing. A Housing Application Packet is mailed to every student when admitted. Final housing assignments are contingent upon confirmation of admission; assignment priority is based upon academic class standing (first year student, graduate student, etc.) and the date of receipt of the application and housing deposit. All single students sign a nine-month academic year housing lease (September-June); housing charges are due when tuition is due each academic term. Summer housing for single students is available in the Southeast area (not in CCRH) under a separate summer lease. The lease for family and graduate student apartments is for twelve months (September through August) and rent payments are due monthly.

Applications, current rates, and additional information are all available from the Housing Office, 606-A South Loop Road (205/895-6108). Individual and group tours of UAH Housing may be arranged by appointment through the Admissions Office.
Preschool Learning Center

There is an on-campus preschool provided by the University Preschool Parents Association to accommodate students, faculty, and staff, as well as the public. A stimulating environment is provided daily at the center, according to a fundamental philosophy that learning should be fun. In addition to cognitive development, the center focuses attention on the social, physical, and emotional development of the children enrolled. The center is staffed by professional teachers and well-qualified teacher aides, each of whom is attentive to the needs of individual students. The center has several attendance plans to accommodate the various schedules of student parents. Call 837-9553 for information.

The University Center

The University Center is a part of the co-curricular educational program of the University and is a focal point of the campus. Designed for the entire campus community, it offers facilities and programs to meet the intellectual, social, recreational, and cultural needs of students, faculty, staff, alumni, and the entire Huntsville community.

The facility offers meeting rooms, a dining room, a cafeteria, lounges, a game room, TV viewing rooms, an information desk, a computer terminal room, a typing room, an art gallery, and the University Bookstore.

The offices of the Vice-President for Student Affairs, the Student Government Association, Association for Campus Entertainment, the Exponent, Admissions and Records, Financial Aid, Academic Advisement, Co-op, Career Services, Testing Services, Student Activities, Student Development Services and the Bursar are also located in the University Center.

Student Identification Cards

All students must have a valid photo I.D. for the term in order to use the library, participate in student elections, athletic events, and all functions for which a student may be entitled to special privileges. Photo I.D. cards are issued once and only need to be validated each term enrolled. Validation is done at the University Center, Information Desk. Photo I.D. cards are made in the Gameroom, University Center during announced hours.

Information Desk

In addition to having general campus information, the information desk sells a variety of items. The university community may pick-up or purchase tickets for campus events, get assistance in scheduling events in the Center, or receive directions to campus or community points. Typewriters are available to those with a current student I.D. Academic, admissions, and financial aid information is available from the information desk in the student services corridor of the building.

Lounges

Two well lit, spacious lounges, designed as a place to relax and meet friends, are equipped with comfortable furniture.

Game Room

Located in the lower level of the Center, the game room has pool tables and ping pong tables as well as a wide variety of pinball machines and video games. A large number of board games are also available. Two TV lounges, with cable TV, are located in the game room.

Meeting Rooms

The Center has 10 meeting rooms designed for multipurpose functions. The rooms can accommodate meetings of from 10 to 500 people. The Center has a large number of tables, chairs, portable stage and audio-visual equipment and can assist in designing set-up to make any conference or meeting a success.
University Bookstore

Located on the lower level in the University Center, the UAH Bookstore is a full-service college bookstore operating for the needs and convenience of the UAH Community. The University Bookstore provides required and supplemental textbooks, a large selection of technical and reference books and various study aids including Cliff’s notes and Schaum’s outline series. The bookstore also buys used texts from students during the store hours year round. In addition to these services, the bookstore will special order any book in print.

In the University Bookstore, students can find UAH Campus sportswear, UAH insignia gifts, cards, imprinted notebooks, a wide variety of school supplies, calculators, and a choice of Artcarved or Josten’s class rings.

University Food Service

A completely modern and spacious serving and dining area greet customers to the University Cafeteria. A complete line of short order items, ice cream shop, deli, and hot food are available to patrons. A more formal dining area, located behind the cafeteria, is available for luncheon buffets and catered dinners in the evenings. The Food Service will cater to all areas of the Center as well as other parts of the campus. Additionally, meal plans are available for purchase by students, faculty and staff.

Activities

The Student Activities office offers a wide variety of activities in which students may become involved. The advisor to the sororities and fraternities and the Association for Campus Entertainment is located in this office. The Student Activities office organizes a variety of activities for students and their families such as the weekly Children’s Hour, Family Night Out and College Bowl Program. The Student Activities office also maintains a complete listing of clubs and organizations.

Student Government Association (SGA)

The Student Government Association promotes the welfare of students in all areas of University life. Its primary purpose is to help improve the educational environment. This includes promoting academic innovation and working closely with faculty and administration toward making desirable changes in institutional policies.

The SGA is responsible for developing and sponsoring programs which will enrich the student’s cultural, intellectual, and social life. Each student enrolled in UAH is automatically a member of the SGA. An executive branch, a fifteen member legislature, and a five member arbitration board are responsible for carrying out the official business of the organization.

The association sponsors over sixty clubs and organizations across campus in addition to providing many student services such as health insurance, special rates for community cultural events, and a student directory.

Association for Campus Entertainment (ACE)

The Association for Campus Entertainment presents student activity programs for UAH through its seven activity boards. The purpose of ACE is to provide entertainment, as well as to enhance a student’s cultural, intellectual and social life.

ACE also provides the students with a telephone information service known as “The Source”, which can be reached at 895-6666.

The activity boards contained in ACE are as follows:

Cabaret

The ACE Cabaret Series presents various types of live performers to UAH, from comedians to magicians. Past entertainers have included Paula Poundstone, Emo Phillips, Del Suggs, and Mark DiShera.
Cabaret also operates “Mom’s” – UAH's only nightclub. Each Thursday night, Mom’s provides live entertainment, a selection of coffees, soft drinks, and assorted chips for just $1.00. Mom’s is located in Room 146 of the University Center—just look for the stained glass window. Bring your friends to hear nationally known comedians such as Jim McHugh and Mark DiShera or to hear upcoming musicians like Del Suggs and 5th Avenue.

Special Events

The Special Events committee is responsible for planning annual events such as Homecoming, Octoberfest, and Springfest, which is the culmination of a year’s worth of activities. The Special Events director also coordinates the Film and Lecture Series.

In addition to weekly films, the Film Series presents midnight movies, “The Rocky Horror Picture Show”, outdoor movies, and film festivals. Previous movies have included “Awakenings”, “Die Hard 2” and “Home Alone.”

The ACE Lecture Series helps bring together the academic and social environments within the University, presenting speakers on the serious issues of today. The Lecture Series also brings stars and speakers from popular television shows and motion pictures. Past guests have included Adrian Cronauer, George Takei, Spanky McFarland, and Martha Quinn of MTV.

Performing Arts

The Performing Arts board brings theater productions to the University. University Playhouse presents a wide range of successful plays, from musicals to comedies to dramas. University Playhouse is among the many fine theater companies in Huntsville. Its reputation is known throughout the Southeast. Past productions have included “Beyond Therapy”, “What the Butler Saw’ and “Visit to a Small Planet.” In addition to fine plays, the ACE Performing Arts board presents drama workshops and renowned performing arts groups for the University community.

Publicity

The Publicity and Promotions Director informs potential audiences of all programs that the other ACE Activity Boards are bringing to campus. Radio, television, and printed materials are all utilized in the effort to publicize ACE programs.

Student Organizations

Accounting Club

The purpose of the Accounting Club is to promote interest in the accounting profession and provide students an opportunity to become better acquainted with each other, the accounting faculty, and accounting practitioners. Activities include meetings which feature guest speakers, facility tours, and social activities. Membership is open to all students in accounting and related disciplines.

Amateur Radio Association

The design of the Amateur Radio Association is for licensed amateurs and would be amateurs. The organization does have facilities for amateur frequencies (DX). This group participates in the local repeaters which includes pocket radio.

American Institute of Aeronautics and Astronautics (AIAA)

The American Institute of Aeronautics and Astronautics (AIAA) holds meetings and participates in projects to supplement academic studies. Programs include lectures by leaders in the aerospace industry, field trips to industry, and regional student conferences where original technical papers by undergraduate and graduate student members are presented. Any part-time or full-time student with an interest in space related topics, may join the UAH student chapter of the AIAA. For more information about membership contact Joe Carden at 852-5867 or leave messages.
American Institute of Chemical Engineers (AIChE)

The objective of AIChE is to contribute to the development of chemical engineering at UAH through activities involving the faculty and student members while promoting the professional development of its members by programs relating the student organization to local, regional and national AIChE activities. Membership is open to all undergraduate chemical engineers.

American Marketing Association

The Marketing Club is open to all students having an interest in marketing and/or a desire for a career in marketing after graduation. Membership provides full affiliation with the national American Marketing Association and a subscription to the Marketing News, a twice monthly marketing trade publication. Meeting and other club activities are directed primarily toward career development for marketing club members; guest speakers for club meetings are selected for their potential contribution to job seeking and career development.

American Society of Civil Engineers (ASCE)

The purpose of the ASCE Student Club is to promote the profession of civil engineering among students through organized programs and projects. Professional and community oriented activities provide an opportunity for students to learn the meaning of professionalism. Scheduled meetings include speakers, field trips, and social activities.

American Society of Mechanical Engineering (ASME)

The purpose of ASME is to aid mechanical engineering students in their personal and professional development. Membership is open to all engineering students. Activities include speakers, business meetings, projects, field trips, and social activities.

Art Club Focal

The purpose of Art Club Focal is to (a) foster a wider student interest and participation in the arts, (b) encourage community interest and involvement in the art activities at UAH, and (c) promote a broader scope of education through extra-curricular activities such as field trips, workshops, lectures, and films.

Association for Computing Machinery (ACM)

The Student Chapter of the ACM is a technical organization for all students interested in computer science. The purposes of the club are to assist the student in professional development as a computer scientist, to promote good fellowship among students and faculty in computer science, and to provide for contact between students and representatives of both industry and graduate research institutions.

Association of Nursing Students

The purpose of this association is to provide a means to aid nursing students in realizing professional goals and to provide interaction and fellowship among clinical and preclinical nursing students. Any student enrolled in nursing at the university is eligible for membership. Through this organization, students participate in local projects, social activities, and programs as well as those of the state and national nursing student's associations.

Ballroom Dance Club

The purpose of the club is to foster a wide student interest and participation in ballroom dance, to offer students of HHE ballroom dance classes an appropriate time and place to practice and develop skills acquired in those classes, and to assist students in further developing dance skills and leadership skills.
Baptist Campus Ministry
The Baptist Student Union exists for the purpose of providing an outlet for Christian expression, discussion, and study. Membership in the BSU is open to any University student. Its student center is adjacent to campus on Sparkman Drive.

Biology Club
The objective of the Biology Club is to promote interest and research in biological sciences. Any person enrolled as a full-time or part-time student and interested in biology is eligible for membership. The meetings are called by the president. Activities are aimed at giving the members a first-hand look at science in its natural environment and include field trips, lectures, and films. The club also offers aid on research projects.

Black Student Association
The goals of the Black Student Association include promoting unity and black cultural awareness among students, encouraging students to participate in all campus activities, promoting race relations among students at UAH and fostering the needs and interests of minority students.

Boost Alcohol Consciousness Concerning the Health of University Students (Bacchus)
BACCHUS promotes the idea of students having good times and fun without the excessive use of alcohol. It is a national organization with over 335 chapters at colleges and universities across the country. The BACCHUS movement aims to empower students to make healthy decisions for themselves.

Business Council
The Business Council is comprised of the presidents and vice presidents of all the business clubs with the Dean and the Assistant Dean of the College of Administrative Science acting as advisors. The Business Council conducts a job fair for prospective graduates each year. Social events and programs of interest to students in all business fields are provided.

Campus Ministry Association (CMA)
CMA is a collection of faith groups which provides responsive ministry in and with the UAH community. The Association's primary focus is the enrichment of the University experience among students, faculty, and staff. For more information call 551-0257.

Chemistry Club
The Chemistry Club promotes an awareness of the science of chemistry among students at UAH. Members learn about current research in chemistry, and also about career opportunities in chemistry and those professions which depend upon chemistry. Activities include speakers, field trips and social events. Membership is open to all graduate and undergraduate students interested in chemistry. For more information call the Chemistry Office, 895-6153.

Chinese Student and Scholars Association from Mainland China
The purpose is to promote the mutual understanding among people with different cultures.

Chinese Student Association from Taiwan
The goals of the Chinese Student Association is to introduce students to American culture and to provide social activities.

Christian Student Organization
This organization was founded to promote spiritual growth and development among college students.
Circle K International  
Circle K International is composed of students who wish to become actively involved in community concerns via service projects and activities. Circle K International members express their care by assisting the elderly, the underprivileged, and the UAH campus. Sponsored by the Huntsville Metropolitan Kiwanis Club, UAH's Circle K holds weekly meetings.

Collegiate Republicans Club  
The College Republicans foster and encourage the activities of the Republican Party, assist in the election of Republican candidates to local, state and national office and formulate and administer programs aimed at involving college students in the Republican Party.

Data Processing Management Association (DPMA)  
The DPMA student chapter program is designed for students planning careers in information processing or related fields. Student chapters provide students with opportunities to exchange information with members of the information processing community and to explore various career opportunities. To be eligible for membership, students must be pursuing a major in either MIS or computer science.

Die Deutsche Studenter Organization (DSO)  
An organization to promote interest in the usage and study of the German language, mainly for students to practice speaking. Open to all faculty, staff and students.

English Language Forum  
A student organization to foster study of the English language and teaching of English as a second language.

Fellowship of Christian Athletes  
The purpose of this organization is to provide fellowship to student athletes, coaches, and athletic administrators who embrace the same Christian beliefs.

Fellowship of Christian Students  
The purpose of this organization is to provide an opportunity for fellowship and Bible study among all religious students, particularly those associated with the Churches of Christ.

Financial Management Club  
Membership in the Financial Management Club is open to any student interested in a career in finance, including real estate, insurance, banking, investments, and financial management. The club is devoted to the professional development of its members and to fostering improved relationship among students, faculty, and professionals in the several areas of finance.

French Club—"Le cercle francais"  
The purpose of Le Cercle Francais is to promote understanding and appreciation of the culture of France and francophone countries throughout the world (Belgium, Canada, Switzerland, Black Africa, Haiti). The Club also tries to further French studies among UAH students. The club meets once a month in a social milieu for specific programs and discussions.

Frisbee Club  
Open to all students, members participate in the promotion of frisbee sports and help with the upkeep of the UAH frisbee golf course. The course is one of only three on a state university campus in the country.
Forensic Club

The Forensic Club offers highly motivated students the opportunity to study and participate in intercollegiate CEDA-style debate, as well as various on-campus debating activities. Membership is open to all students, and interested persons should contact the Communication Arts Department, Morton Hall (895-6645) early in the academic year.

Gays and Friends

The purpose of this group is to establish interaction between homosexuals and heterosexuals; to share views, lifestyles and opportunities; to offer social activities and awareness of equality; to enlighten the community; and to act as an informational resource.

General Union of Palestine Students

The purpose of the General Union of Palestine Students is to unite the students of the Middle East into a club to communicate socially and intellectually with other University clubs in order to promote friendship and understanding between cultures.

German Club

The German Club promotes interest in the usage and study of the German language, in the cultures and literatures of the German-speaking countries, Germany, Austria, Switzerland, and in international exchange and understanding. The membership is open to all faculty, staff, and students of the various disciplines. The club meets once a month for specific programs, and for more informal activities at additional times.

History Forum

The History Forum sponsors a series of lectures in the winter term each year. The Forum invites distinguished speakers from across the United States and abroad to speak on historical topics of current interest. The Forum is a student-faculty group organized with student officers supported by history department faculty members. It is open to all members of the University community.

Indian Student Organization

The purpose of this organization is to promote friendship and understanding among students from India.

Institute of Electrical and Electronic Engineers (IEEE)

The Student Chapter of IEEE is a technical/professional organization for students in electrical engineering. Monthly meetings feature guest speakers, films, projects, or facility tours acquainting members with various aspects of electrical engineering. Membership is open to all undergraduate and graduate students in electrical engineering who are at least half-time students.

Institute of Industrial Engineers

The objective is to promote the profession of industrial engineering among students through organized programs and projects.

International Student Organization

The International Student Organization was established to foster friendship and understanding among students from various nations and cultures. It provides a basis whereby international students can share their knowledge about their native cultures with groups in the university community and with the general public. In addition, the organization offers assistance to
recently arrived students from nations other than the United States. Regular membership is open
to any individual currently enrolled at UAH, including the Division of Continuous Education.
Associate membership is open to anyone who believes in the purpose of the organization and
wishes to help it obtain its goals. For more information call 895-6750.

Japanese Club

The purpose of the Japanese Club is to create an environment in which UAH students of the
Japanese language, culture and heritage meet together and with the UAH community and the
general public to share information about Japanese and American cultural patterns.

Karate Club

The objectives of the Karate Club are to promote the sport of Karate, to create opportunities
for students to compete, and to increase campus awareness of self-defense. Seminars and train­ing
workshops are presented for the benefit of the club members. Membership is open to all stu­
dents who are or who have been exposed to the martial arts.

Korean Students Association

The purpose of this organization is to promote mutual friendship and solidarity among
Korean students at UAH and to give other students a better understanding of Korean culture
and history.

Lancers

Outstanding students are selected each year for their leadership, achievements and public
relations skills to serve as the official student representatives of the University. The men and
women who serve as Lancers introduce UAH to many exciting visitors and play an important
role in assisting with events on and off campus. Faculty, staff and other student organizations
can call on the Lancers for help with activities that benefit UAH. For more information about
joining the Lancers or requesting their assistance, contact the Office for University
Advancement.

Mathematics Club

The purpose of the Mathematics Club is to increase the influence of the University in mathe­
matics and its applications, to promote good fellowship, and to offer services to students and
faculty in the field of mathematics. The group is open to all students, and meetings are held
monthly during the academic year.

Medical Careers Association

The Medical Careers Association is for students who intend pursuing a career in the health
field, which includes premedical and predental students as well as those in nursing and allied
health sciences. The purpose of the association is to help its members fulfill the entrance
requirements of the various professional schools across the nation and to acquaint them with
opportunities in the health fields. Interviews with and lectures by admission officers of profes­sional schools, programs about the latest advances and opportunities in the health fields, and
guidance in the selection of courses of study are some of the services provided by the associa­tion.

Medical Student Association

The Medical Student Association was created to provide a forum for the members of the
School of Primary Medical Care. This organization seeks to develop opportunities for personal
growth and to foster an atmosphere of mutual respect between students and community.
Model United Nations Club (Political Science)

The purpose of the UAH Model United Nations Club is to assist all UAH students in all disciplines to achieve greater understanding of international affairs and organizations, to learn skills in public speaking and debate, to study the functions of the United Nations, to provide members of the club and the University Community with information and programs of interest, and to help students to participate in the Annual Deep South Model United Nations sponsored by Auburn University and to participate in other Model United Nations meetings where appropriate.

Music Educators National Conference

This organization seeks to acquaint its members with the music profession and to work to increase interest, knowledge, and productivity in all areas of music education.

Muslim Student Association

The purpose of this organization is to promote unity and joint action among the Muslims, to conduct social, cultural, religious and other activities in the best traditions of Islam, to arrange and hold congregational prayers and Islamic religious festivals at appropriate times, to promote friendly relations among Muslims and non-Muslims, to endeavor to make Islamic teachings known to interested non-Muslims, and to provide needed general guidance and/or assistance to Muslims coming to the community.

National Association of Accountants (NAA)

The National Association of Accountants is a professional organization whose purpose is to promote excellence in management accounting. Monthly meetings of the North Alabama Chapter feature guest speakers on various accounting/business topics. UAH accounting students are eligible for student memberships for a special reduced fee. Through interaction with NAA members, students learn about career opportunities in management accounting.

National Association of Business Economists Student Chapter

Students enrolled in business economics or related fields are eligible for student membership in the National Association of Business Economists, the largest association of economists connected with private business. One of the purposes of the national association is to illuminate the contribution which trained economists can make in the business firm. The purpose of the UAH chapter is to provide a forum for social and professional exchange between students, faculty and the national association.

National Society of Black Engineers

The objectives of the National Society of Black Engineers are to stimulate and develop student interest in engineering; to promote participation at all levels of responsibility in the field of engineering by the black and ethnic minority communities; and to advance the black professional engineer within the individual engineering disciplines.

Phi Beta Lambda (Business)

Phi Beta Lambda is national organization for college students preparing for careers in the fields of business, office and business teacher education. Members receive Tomorrow’s Business Leader, the official magazine of FBLA-PBL. It contains career tips and the latest FBLA-PBL news from across the nation. PBL provides a variety of activities for its members, from professional workshops to picnics and field trips. PBL also takes a stand in the community by helping charity and health organization.
The purpose of the Political Science Club is to promote interest in politics and policies at the domestic and international levels, and to provide an opportunity for faculty and student interaction. The club holds regular business meeting and discussions. Past activities have included lectures, symposiums involving the Huntsville community, and various social events.

Public Relations Council of Alabama Student Chapter

The Public Relations Council of Alabama Student Chapter is open to all students who have sophomore standing. The objectives of the club include increasing communication between the schools on campus and publicizing these schools. There is a minimum of four meetings per year which are randomly called by the president. The club interacts with the Huntsville PRCA Chapter regularly.

Resident Life Association

The purpose of the Resident Life Association is to encourage the intellectual, social, cultural and recreational growth of students residing in University Housing.

Rowing Club

The purpose of this club is to provide rowing experiences and to support the university rowing team. The group encourages both the competitive and recreational rowing sport. Membership is open to all interested individuals. Rowing opportunities are available most Saturday and Sunday mornings.

Slovo-Slavic Club

The Slovo-Slavic Club is for students who wish to further their understanding of Slavic cultures. Although the emphasis is on Russia, the whole spectrum of Slavic nations is studied. At club gatherings, the members use various media to investigate different facets of their interests.

Society of Ancient Languages

The purpose is to foster the appreciation and study of ancient languages at UAH.

Society for Industrial & Applied Mathematics (SIAM)

The purpose is to stimulate interest in mathematical and mathematics-related topics not generally under the auspices of a specific course.

The Society of Physics Students

The Society of Physics Students promotes contact between fellow students and faculty and provides a medium for interaction with the local physics community and other universities. Students in SPS pay minimal national dues and receive Physics Today. Any interested student may join.

The Society of Women Engineers

The Society of Women Engineers is a professional, non-profit educational service organization set up to inform women of the opportunities available to them in industry. The Society encourages all math, science, and engineering students to meet monthly and share in the many experiences that other women in technology have had. It provides students with a chance to socialize, a chance to mingle and interact with company representatives and, thus, it provides a head start towards becoming a true professional.
Spanish Club—“La tertulia”

The purpose of the Spanish Club is to provide an opportunity for friendship and association among students interested in the Spanish language and Hispanic culture; to promote understanding and appreciation of Hispanic culture/literature, art, music, drama, history, geography, politics, and economics; to encourage the study of the Spanish language; and to contribute to the advancement of intercultural relations and international understanding.

Student Alabama Education Association

The UAH chapter of the student AEA is for students who plan to be educators. One of the association’s purposes is to involve students in the issues and processes of education before they begin their careers. Any undergraduate education student may join.

Students for the Exploration and Development of Space (SEDS)

The Students for the Exploration and Development of Space educates students and the general public about the benefits of space exploration and development. The organization also provides a forum for the discussion and exchange of ideas related to the exploration of and development for space.

Students over the Traditional Age (SOTA)

The Students Over the Traditional Age club’s purpose is to promote the exchange of knowledge and experiences among students who are 25 or older.

World Issues Society

It is the purpose of the World Issues Society to promote an interest in the study of sociology, research of social problems, and such other social and intellectual activities as will lead to improvement in the human condition.

Greeks

Interfraternity Council (IFC)

IFC serves as the governing body of the six fraternities at UAH in order to develop cooperation and coordination of activities among the member fraternities. The six national social fraternities on campus are Alpha Phi Alpha, Alpha Tau Omega, Delta Chi, Kappa Alpha Psi, Pi Kappa Alpha, and Sigma Nu. For more information contact the Interfraternity Council Advisor at 895-6445.

Panhellenic Council (Panhel)

The Panhellenic Council is the organization which coordinates sorority activities at UAH. The five social sororities available to young women at UAH are Alpha Kappa Alpha, Chi Omega, Delta Sigma Theta, Delta Zeta, and Kappa Delta. For more information contact the Panhellenic Advisor at 895-6445.

Academic Honor Societies

Administrative Science Honorary

The Administrative Science Honorary is for students majoring in one of the disciplines of the College of Administrative Science. Its purpose is to recognize, promote, encourage, and maintain academic excellence and to provide an opportunity for personal growth through participation with the academic community and professional involvement beyond the classroom. Standards for membership are completion of 60 semester hours (the last 30 at UAH), a cumulative grade point of 3.5 or above, and recommendation by a member of the Administrative Science faculty.
Alpha Epsilon Delta (Pre-Health)
The UAH chapter of Alpha Epsilon Delta, the national pre-health professional honor society, was established on campus in the fall of 1978 and was chartered in the spring of 1979. Membership in Alpha Epsilon Delta is an honor bestowed in recognition of superior scholarship achievement and affords the student an opportunity to develop initiative, leadership, and self-education by participating in the activities of the chapter.

Alpha Kappa Delta (Sociology)
The Epsilon of Alabama chapter of Alpha Kappa Delta was chartered by the National Sociology Honorary Society in the Spring of 1976. It thus became the fifth chapter of this society in this state. Membership in AKD is limited to students who have maintained a high standard of excellence in their courses of study in sociology and who show serious interest in this academic field. The candidate for membership in the chapter must be a junior with an overall GPA of 3.0, must maintain a 3.0 GPA in sociology courses taken at UAH, and must have completed at least 4 regular courses in sociology prior to initiation. Election to AKD shall be without regard to race, creed, sex, or national origin.

Alpha Lambda Delta (Freshman)
The UAH chapter of Alpha Lambda Delta, national scholastic honor society for freshmen, was installed in the fall of 1974. The purposes of the society are to encourage superior scholarship attainment among students in their first year in institutions of higher education, to promote intelligent being and a continued high standard of learning, and to assist students in recognizing and developing meaningful goals for their roles in society. To become a member, a student must earn a scholastic average of 3.5 during the first, second, or third quarter of enrollment.

Alpha Pi Mu (Industrial Engineering)
The national honor society for industrial engineers, Alpha Pi Mu was founded at the Georgia Institute of Technology in 1959 to recognize industrial engineering students of distinguished scholarship.

Alpha Psi Omega (Theater)
The Xi Theta cast of Alpha Psi Omega was established at UAH in 1983 an chartered in 1984. Alpha Psi Omega is the national theater honorary whose purposes are to recognize those students who have achieved a high standard in dramatic arts and to provide a wider fellowship for those interested in the theater. Membership is earned through work in University-sponsored theater activities and is open to students of any major.

Eta Kappa Nu (Electrical Engineering)
The Theta Eta (UAH) Chapter of Eta Kappa Nu was chartered on April 29, 1978. The objectives of Eta Kappa Nu are to honor those students of electrical engineering who have excelled in scholarship, leadership, and exemplary character and to unify them with graduates and faculty who have attained prominence in the field of electrical engineering. Membership is open by chapter invitation only to graduates, faculty, professionals, juniors in the top fourth of the electrical engineering class, and seniors in the top third of the electrical engineering class.

National Management Association
The student chapter of the National Management Association is an honorary organization offering membership to any student in the College of Administrative Science who maintains a minimum 2.7 grade point average and an interest in the field of Management as a primary function or as an auxiliary function to some other area of Administrative Science.
Omicron Delta Epsilon (Economics)

The objectives of Omicron Delta Epsilon, international honor society in economics, are recognition of scholastic attainment in economics, the honoring of outstanding achievement in economics, the establishment of closer ties between students and faculty in economics within and among colleges and universities, and the publication of the official journal, *The American Economist*.

Omicron Delta Kappa (Leadership)

The purpose of the Omicron Delta Kappa Society is to recognize individuals who have attained a high degree of leadership in collegiate and related activities, to encourage them to continue along this line, and to inspire others to strive for similar conspicuous attainment; to bring together representative individuals in all phases of collegiate life and thus create an organization which will help mold the sentiment of the institution on questions of local and intercollegiate interest; and to bring together members of the faculty and student body of the institution on a basis of mutual interest, understanding, and helpfulness.

Order of Omega (Greek)

The Order of Omega organization is to recognize those students who have attained a high standard of leadership in inter-Greek activities, to bring together members of the faculty, alumni and student member of the institutions, fraternities and sororities.

Phi Alpha Theta (History)

UAH has a chapter of Phi Alpha Theta, international history honorary society. Membership is open by invitation only to history students who have completed a minimum of 12 hours in history with a grade point average of 3.5 and an overall average of 3.0 in all courses.

Phi Delta Kappa

A number of faculty and staff members are actively involved in the Huntsville chapter of Phi Delta Kappa, national leadership fraternity in the field of education.

Phi Kappa Phi (Multi-discipline)

The primary objective of the national honor society of Phi Kappa Phi is the recognition and encouragement of superior scholarship in all academic disciplines. The society is convinced that in recognizing and honoring those persons of good character who have excelled in scholarship in whatever field, it will stimulate others to espouse excellence. Moreover, the society feels that it serves the interests of the student capable of excellence by insisting that to acquire a chapter of Phi Kappa Phi, an institution provide the atmosphere conducive to academic excellence.

Phi Sigma Iota (Foreign Language)

Phi Sigma Iota recognizes outstanding ability and high standards in the field of foreign languages, literatures, and cultures, including classics, linguistics, philology, comparative literature, bilingual education, and other related areas. It promotes international communication and understanding, and a sentiment of amity among nations. Membership is open by nomination to any UAH student who is at least a junior; has a B average overall, as well as in foreign languages; has completed at least one foreign language course at the 300 level; is enrolled at UAH at the time of being offered membership; and who plan to take at least two 300 level courses in foreign languages.

Pi Kappa Delta (Forensics)

The purpose of this honor fraternity is to foster wide student interest and participation in collegiate forensics, to promote the development of self-esteem, leadership and communication skills and to honor students exhibiting these qualities.
Pi Sigma Alpha (Political Science)

Pi Sigma Alpha is the national honorary society for political science students with junior standing having a minimum of ten semester hours and a B average or higher in political science courses.

Pi Tau Sigma (Mechanical Engineering)

Pi Tau Sigma is the national Mechanical Engineering Honor Society. The purposes of Pi Tau Sigma are to foster the high ideals of the engineering profession, to stimulate interest in coordinate departmental activities, to promote the mutual professional welfare of its members, and to develop in students of mechanical engineering the attributes necessary for effective leadership. Eligibility extends to the top quarter of the juniors and the top third of the seniors in mechanical engineering.

Psi Chi (Psychology)

Psi Chi is a national recognition society for students in the field of psychology. The purposes of Psi Chi are to encourage, stimulate, and maintain scholarship of the individual members in all fields, particularly in psychology, and to advance the science of psychology. To achieve these goals Psi Chi offers a wide range of programs at the local, regional, and national levels. The requirements for admission are a 3.0 overall grade point average and a 3.0 in psychology, and 12 hours of psychology for a minor or 15 hours for a major.

Sigma Pi Sigma (Physics)

The Sigma Pi Sigma honorary society operates within the Society of Physics Students. Membership is based on general scholarship. An overall GPA of 2.75 and a GPA of 3.2 in at least 5 courses in physics are required for membership in Sigma Pi Sigma.

Sigma Tau Delta (English)

The UAH chapter of Sigma Tau Delta, a national English honorary society, is Upsilon Mu. Its purposes are to assist in developing, maintaining, and promoting literary and educational activities for students and alumni of the chapter, as well as the entire University and civic community. Membership is open by chapter invitation only to English majors and minors of junior standing who have a 3.0 grade-point average.

Sigma Theta Tau (Nursing)

Sigma Theta Tau is the international honor society of nursing. The purposes of Sigma Theta Tau include the recognition of superior achievement and leadership qualities, the fostering of high professional standards and creative work, and the strengthening of the individual's commitment to the ideals and purposes of the nursing profession. Invitation to membership may be extended to junior and senior nursing students who have completed at least one-half of the required nursing component with a grade point average of 3.0. Graduate students in nursing who have completed one-fourth of the required graduate curriculum may be eligible for membership with a grade point average of 3.3.

Society of Sigma Xi (Science Research)

Sigma Xi, founded in 1886, is a scientific honor society which was organized to reward excellence in scientific research by graduates, undergraduates and faculty researcher and to encourage a sense of cooperation among scientists in all fields.

Tau Beta Pi (National Engineering Honor Society)

The Tau Beta Pi Association was founded at Lehigh University in 1885 to mark in a fitting manner those who have conferred honor upon their alma mater by distinguished scholarship and exemplary character as students in engineering, or by their attainments as alumni in the
field of engineering, and to foster a spirit of liberal culture in engineering colleges. Scholastic requirements include: class standing of the top eighth of the junior class or the top fifth of the senior class and demonstration of exemplary character.

Upsilon Pi Epsilon (Computer Science)

The Computer Science Honor Society is for both graduates and undergraduates.

Art Programs and Exhibitions

The Department of Art and Art History sponsors exhibitions and activities throughout the year which are important to the cultural growth and enrichment of campus life at UAH. Students and faculty are welcomed and encouraged to participate in and contribute to these worthwhile opportunities.

The UAH Galleries of Art

The Art Department organizes exhibitions and events in two galleries on the UAH campus. The Old Church Gallery, located just west of the University Center, and the University Center Art Gallery, located off the main lobby of the UC, provide opportunities for the University and Huntsville communities to view the work of local, regional, and nationally recognized artists. The exhibitions change monthly and offer a wide range of artistic perspectives.

The Annual Student Exhibition

Each spring the Art Department sponsors an exhibition, juried by the faculty, dedicated solely to showcasing the work and talents of UAH students. Any student enrolled in the University is eligible to participate.

The Faculty Exhibition

During the winter term, visitors to the UC Gallery have an opportunity to study the outstanding work recently produced by UAH’s own studio faculty members.

The Visiting Artist Program

This program offers opportunities for the public to meet, listen, and talk with the artists exhibiting their work in the UAH galleries. Presentations by distinguished artists visiting the campus often include studio and classroom sessions as well as public lectures.

The UAH Southeastern Student Biennial Exhibition

This exhibition, juried by noted artists or art professionals, is open to all college art students in the southeastern United States, undergraduate and graduate. This is a unique opportunity for students to see excellent work being done by up and coming young artists in the region.

Music Organizations

All musical organizations are open to all students, music and non-music majors. A student should be able to make a place for himself in some performing group, regardless of his musical background and tastes. Credit is offered for most ensemble experience, and participation may be repeated with approval of the conductor.

UAH Choir

The choir performs choral literature of the great masters of music history as well as folk music of various countries. Attendance at all rehearsals and performances is required. Audition with conductor is required.
Huntsville Symphony Orchestra

The Huntsville Symphony Orchestra, a semiprofessional blend of University and community talent, prepares six formal concerts each year. Four international artists perform with each annual concert series. The orchestra rehearses Monday and Friday from 7:30 to 10:00 p.m. Audition with conductor is required. Attendance at rehearsals and performances is also required.

UAH Jazz Ensemble

A workshop experience providing students with instruction in jazz arranging and composition and in improvised jazz is stressed. Attendance at rehearsals and performances is required. Audition with instructor is also required.

UAH Wind Ensemble

A select group of experienced bandsmen who perform the best available music literature for wind ensemble and concert band. The ensemble rehearses Wednesday from 7:00 to 9:30 p.m. Attendance at all rehearsals and concerts is required. An audition with the conductor is also required.

UAH Pep Band

The Pep Band is a musical organization of students that promotes spirit and enthusiasm at a variety of athletic events. Members and scholarship recipients are chosen by audition and may elect to enroll in the group for class credit.

Intercollegiate Athletics

UAH currently sponsors 11 varsity intercollegiate athletics programs, 9 of which are members of the National Collegiate Athletics Association and 2 of which are members of the Southern Intercollegiate Rowing Association. The programs are men’s and women’s cross country, tennis, crew and basketball; men’s soccer and hockey; and women’s volleyball. Participation is open to qualified students.

Basketball (Men)

The men’s basketball team annually hosts the Arby’s Thanksgiving Basketball Tournament, which will be held in 1992 in the Von Braun Civic Center. The NCAA Division II tournament is a season highlight, along with the Mayor’s Cup Classic against cross-town rival Alabama A&M University. In the Mayor’s Cup, teams compete for the city’s basketball boasting rights. The Chargers currently own the trophy.

Basketball (Women)

The women’s basketball team is known for producing quality players such as All-Americans Crystal Cooper and Annette Fletcher. Long-time women’s basketball coach and player, Donna Dunnaway, was an inaugural member of the Charger Hall of Honor. The season highlight for the Lady Chargers is the Mayors Cup Classic, which the women won in 1990.

Soccer (Men)

The soccer team plays its games on the recently renovated Charger Field located on the UAH campus. The Chargers are known for their recruitment of players from local high schools and their popularity in the community.
Volleyball (Women)
Lady Charger volleyball is a respected program which has boasted a winning season the last several years. The program annually hosts a tournament on campus that attracts the top teams in Division II of the NCAA.

Hockey (Men)
Charger hockey is the only UAH team that is a member of Division I of the NCAA. They compete in the Von Braun Civic Center against nationally ranked teams such as the University of Maine, Alaska-Fairbanks, Notre Dame and Wisconsin. The Chargers host the International Cup Hockey Tournament each season.

Tennis (Men and Women)
The Charger tennis programs are gradually building strength after their re-establishment in 1986 following 3 years of inactivity. In the past two years the men’s team has boasted a nationally ranked doubles team. They are coached by a local tennis professional, Mike Weckwarth, who teaches at Valley Hill Country Club.

Cross Country (Men and Women)
The cross country program begins its first season in the fall of 1992 after a 5 year hiatus. Eight meets are scheduled for the season.

Crew (Men and Women)
The crew team practices their rowing on the Tennessee River and travels to numerous regattas in the south and the east. In 1988, the two-man crew with coxswain won national recognition by placing first in the Dad Vail Regatta, the national championship of crew.

Cheerleaders (Men and Women)
The UAH cheerleading squad is composed of students whose primary purpose is to promote spirit and enthusiasm for intercollegiate athletics. Squad membership is limited and open to those students who qualify.

Mascot
The UAH mascot, Charger Blue, brings recognition to the University through appearances at athletic and community events throughout the calendar year.

Pep Club
The UAH Pep Club’s mission is to promote spirit and awareness of the University’s intercollegiate athletics programs. It is open to students, staff, and alumni. Activities vary, but include pep rallies and half-time events.

Intramural Sports Program
The intramural sports program serves the recreational needs of UAH students through a planned program of intramural athletics and other forms of recreational activities. It provides opportunities for the development of positive attitudes toward recreational activities throughout life, thus deriving optimum benefits of enjoyment, health, social contacts, and sportsmanship. The philosophy of intramural activities at UAH is based on the concept that students should have freedom of choice and responsibility for sharing in planning, supervising, and administering the program.

All students and members of the faculty and staff are eligible to participate in intramural activities. The team sports include basketball, flag football, softball, and volleyball. The individual sports which are offered are bicycling, horseshoes, golf, bowling, racquetball, swimming, table tennis, tennis, and weightlifting.
Student Publications

The *Exponent*, is the UAH student newspaper. The paper is published weekly except during exams and holidays. The *Exponent* office is located in Room 104 of the University Center, telephone: 895-6090. The Publications Board, a joint faculty-student board, is responsible for the policies, planning, (selection of editors) coordinating and overseeing of the *Exponent* and the student publications under its jurisdiction.

*Shadows* is an art and literary magazine—the printed campus forum for art and literature which is sponsored by the Publications Board. All UAH students are eligible to submit their work for publication in *Shadows*. Anyone wishing to submit art or literature for consideration for the next issue, can bring or mail their work to the *Exponent* office, Room 104, University Center.
The University of Alabama in Huntsville welcomes inquiries and applications from interested persons who wish to further their education. The student body is composed of individuals of all ages - traditional full-time college students and other adults who are combining their educational pursuits with work, family, and various activities. Prospective students should apply well in advance of the date of proposed entrance.

Application forms, detailed application instructions, and information brochures are available at the Office of Admissions in the University Center. A copy of the UAH catalog is mailed to each new student upon admission to the University; additional copies are available for purchase in the UAH bookstore.

Information for prospective students is available through the Office of Admissions. Campus tours on an individual or group basis are available (phone 895-6070). Faculty members and academic advisors (phone: 895-6290) are eager to confer with interested individuals to discuss their enrollment plans and opportunities at UAH.

Undergraduate Admissions Information

Admission policies at UAH provide for a diversity of educational backgrounds. Admission procedures accommodate:

- students who are seeking degrees (regular)
- those who have no immediate degree plans (nondegree)
- individuals who have never attended any college (freshmen)
- those who are transferring from one or more previous colleges (transfers)
- students who have passed the high school equivalency examination (GED)
- students who are presently in high school, are academically talented, and wish to enroll concurrently in courses at UAH (Early Start Program)
- students who have already earned a baccalaureate degree and are seeking another baccalaureate degree (second bachelor's degree) or
- those who are taking courses on a nondegree or preparatory basis for graduate school (nondegree postgraduate)
Eligibility for Admission as a Regular Student

Admission as a regular student is based upon high school and previous college performance, if applicable as well as scores on specified tests. See table below.

### Required Application Materials

<table>
<thead>
<tr>
<th>Classification</th>
<th>Application Forms</th>
<th>$20 Fee*</th>
<th>High School Transcripts</th>
<th>ACT Scores</th>
<th>GED Scores</th>
<th>College Transcripts</th>
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<td></td>
</tr>
</tbody>
</table>

*Nonrefundable.

### High School Graduates

High school graduates may be admitted as regular freshmen on the basis of acceptable high school records and scores achieved on the American College Testing (ACT) program examinations (SAT accepted as substitute for ACT). The two factors of grades and scores are considered together. Higher results in one area are able to offset lower performance in the other. For example, an applicant who earns an ACT score of 22 must have at least a 2.25 average high school academic units in order to qualify for admission. See the chart below for further definition.

<table>
<thead>
<tr>
<th>If Act score is (Enhanced ACT)</th>
<th>If SAT score is</th>
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<tr>
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<tr>
<td>24 or above</td>
<td>1010 or above</td>
<td>1.15</td>
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</tbody>
</table>

**Note:** College of Engineering requires minimum ACT of 21 or SAT of 900 for admission to the College.
Applicants should present a minimum of 20 Carnegie high school units. These should include:

- 4 years of English
- 3 years of social studies
- 1 year of algebra
- 1 year of geometry
- 1 year of biology (recommended)
- 1 year of chemistry/physics (required by the College of Engineering and Science; recommended by all other Colleges)
- 1 year of algebra II/trigonometry (recommended by all Colleges; the College of Engineering specifies 1 year of each)

Sufficient academic electives to meet the required 20 units
(The State of Alabama requires 3.0 units of physical education and 0.5 units of health)

Current high school students will find it to their advantage to follow the advanced diploma curriculum.

Prospective freshmen currently attending high school should apply during their senior year in high school. Tentative admission will be granted on the basis of ACT (or SAT) scores and high school records through the junior year. Work completed in the senior year and confirmation of graduation will be reviewed before a student’s final admission.

Applicants having deficiencies in the required high school courses may be admitted in good standing. The deficiencies, however, must be removed during the first year of enrollment in a manner approved by the department concerned. Courses taken to remedy entrance deficiencies cannot be used to satisfy degree requirements.

High school graduates who have never attended college and who have been out of high school five or more years do not need to submit ACT test scores.

**General Education Development (GED) Recipients**

Persons who have not graduated from high school may be admitted on the basis of a satisfactory score on the GED test. A score of 45 is required for regular admission status. UAH is a testing center for the GED program. Anyone seeking additional information or wishing to take the GED examination should contact the Office of Testing Services (895-6725).

**Early Start Program**

UAH welcomes inquiries from academically talented high school students who wish to enroll in courses for college credit during the summer term between their junior and senior years of high school or concurrent with their senior year in high school. For detailed information, such students should see their high school counselor or personnel in the Office of Admissions.

**Transfer Students**

Students who have previous academic records at a college or university level may be admitted to UAH as transfer students. The high school transcript of a transfer student will also be reviewed for completion of required units, and deficiencies, if any, will be noted on the admission certificate. A student who is currently on suspension from another college or university is not eligible for enrollment until his suspension period has terminated. Admission to the College of Engineering and Nursing is an independent action from admission to the University.

Once a student has enrolled and has accumulated a total of 64 semester hours of credit from all sources, no additional credit may be transferred to UAH from a two-year institution.
Exceptions to this policy must be approved prior to taking additional course work. Requests for exceptions must be in writing and approved by the chair of the UAH department where the course is taught, and by the dean of the college in which the student is enrolled.

Transfer students seeking admission to the College of Administrative Science are admitted with a pre-business classification (code 07) and remain in this classification until they are admitted to the upper division of the College. Transfer students who intend to pursue the BSBA degree should read carefully the College’s section on, “Admission as a Transfer Student” and “Admission to the Upper Division”.

A prospective transfer student who has attempted fewer than 18 semester hours of work at an accredited college or university and who has at least a 1.0 average on a 4.0 scale will be considered for admission on the basis of high school grades and ACT scores.

Applicants with previous records showing 18 semester hours or more of work attempted at accredited colleges or universities must have a minimum overall C (2.0) average on all work attempted in order to qualify for regular admission.

**Evaluation of Transfer Credit**

Transfer admissions decisions will be based on a full evaluation of transcripts from all colleges and universities attended. Transfer credit evaluations will be completed before or during the first term of enrollment.

Credit hours and quality points associated with courses in which the subject matter is not acceptable at UAH will be disregarded when determining admissibility and status at UAH and will thus be excluded from calculations of hours attempted and overall grade point average.

In instances where disallowance of courses reduces the total number of hours of acceptable credits below 18 semester hours with at least a 2.0 average on a 4.0 scale, the applicant will be considered for admission on the basis of high school grades and ACT scores.

Transferred courses in subject matter accepted by UAH with grades of less than C will not be awarded credit but will be utilized in calculating the grade point average for admission criteria and will be included in hours attempted and overall grade point average.

An individual who enrolls as a non-degree student and later decides to work toward a degree must 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 official determination of the individual’s program of study.

Acceptance of credit and application of credits to a specific degree program 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.

A maximum of 64 semester hours of credit from a junior college may be applied toward a degree. Exceptions to the 64-hour maximum must be justified and approved in writing by the dean of the school in which the student is enrolled.

The University of Alabama in Huntsville follows the practices specified in Transfer Credit Practices of Selected 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.

If the previous record was earned at an institution not holding regional accreditation, a decision on acceptance of credits will be made on an individual basis. If credits are accepted, they will be classified as provisional. Full credit for a provisional credit will be based upon performance during the first 30 semester hours attempted at UAH. In order to receive full credit for provisional credit, a student must earn a C or better in each course attempted during the first 30 hours. Each student with credits in this category should see the registrar concerning his status at the end of the term in which he has completed his first 30 semester hours at UAH.
Credit for engineering courses taken at schools accredited by the Accrediting Board for Engineering and Technology (ABET) is transferable to UAH. Engineering courses taken in non-ABET accredited institutions may also be applied toward a BSE degree based upon an appropriate examination (written or oral) at the discretion of the respective department. All inquiries concerning applicability of credit should be made to the UAH engineering department chair where the course, or its equivalent, is taught.

Credit for Business Administration courses taken in schools with American Assembly of Collegiate Schools of Business (AACSB) accredited programs is transferable to UAH. Credit in courses taken in programs without AACSB accreditation may be accepted with approval of the Dean of the College of Administrative Science. Transfer credit will be granted for administrative science courses only with a “C” or better. This policy applies to students entering or re-entering UAH after Winter Term 1983-84. All inquiries concerning applicability of transfer credit should be made to the Office of Academic Assistance, College of Administrative Science, (205) 895-6024.

Transfer Students from Alabama Junior/Community Colleges

A student transferring from an Alabama junior 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 college, provided that the date does not exceed the seven year limit. (See time limits section of the catalog.) This policy enables students enrolled at Alabama junior colleges to effectively plan degree programs 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 colleges are encouraged to consult with their advisors when planning their programs of study.

Admission of International Students

International students are expected to meet all established requirements for admission from secondary schools or from other colleges and universities. All international applicants must apply for admission at least three months in advance of desired attendance date.

Admission Requirements

An undergraduate applicant must submit:
1. Completed application form.
3. Official copies in English of secondary school and college or university transcripts forwarded to the University of Alabama in Huntsville directly from the institution(s) attended. Personal copies are not accepted.
4. American College Test (ACT) scores sent directly to UAH from ACT headquarters. (ACT is not required of an applicant who has earned more than 18 semester hours of college work or was graduated from high school more than five years ago.) SAT may be used as a substitute for the ACT.
5. Scores from the Test of English as a Foreign Language (TOEFL) sent directly to UAH from Educational Testing Service. A minimum score of 500 is required.
6. Since the TOEFL does not measure all language skills necessary for academic success, all international students enrolled at UAH must also take the university’s English Language Placement Test and complete any course work in English as a Second Language which the test indicates is required.
7. A certified financial statement submitted as evidence of sufficient finances to cover university and personal expenses while attending UAH.

8. Evidence be presented of University-approved health insurance coverage. Proof of continued coverage must be presented by the student each term he is enrolled.

9. Individuals in the U.S. on student visas who are transferring from another college or university in the U.S. must show evidence of release from the previous program by the international student advisor at their previous school. Transfer students must have completed the equivalent of one academic term at those institutions before being admitted to UAH.

Non-degree Students

UAH provides simplified admission procedures for students who want to pursue their educational goals, but who have no immediate degree plans. These students, sometimes called "casual course takers;" may choose to apply as special non-degree students. For information, call 895-6070.

Any adult who has completed high school or completed the GED with a minimum score of 50 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 and will count if applicable in a regular undergraduate degree program when the individual qualifies for admission as a regular student.

A student enrolled in this category is subject to the same periodic review of his record as a regular student and is subject to the University's regulations regarding scholastic probation and suspension. (See Academic Information.) If a non-degree student becomes subject to academic suspension, the suspension is for a minimum of one term, and the student must petition the Admissions Committee for approval to re-enroll.

A student enrolled as a non-degree student must satisfy course prerequisites for each course taken.

Conditional Admission for High School Graduates

An individual who has applied under the regular admission plan and who does not meet the criteria for regular admission may be admitted to UAH as a conditional admit. The conditional admit will be required to carry a light course load until he/she has completed a total of 15 semester hours of work. If the student has achieved an overall C average at the completion of 15 or more hours of work, he will be admitted as a regular degree-seeking student. Credits earned as a conditional admit are recorded on the student's permanent record and will count if applicable in a regular undergraduate degree program when the individual has qualified for admission as a regular student.

A student enrolled in this category is subject to the same periodic review of his record as a regular student and is subject to the University's regulations regarding scholastic probation and suspension. (See Academic Information.) If a student becomes subject to academic suspension, the suspension is for a minimum of one term, and the student must petition the Admissions Committee for approval to re-enroll.

Probational Admission for Transfer Students

An individual who has applied and who does not qualify as a regular transfer student may be admitted on probation. A transfer student enrolled in this category is subject to the same periodic review of his academic record as a regularly admitted student who is on scholastic probation. (See Academic Information.) If at such a review point the student becomes subject to academic suspension, the suspension is for a minimum of one term, and the student must petition the Admissions Committee for approval to re-enroll.
Re-Entry

A student who has not attended UAH for one or more terms and who wishes to return should consult with the Office of Admissions to determine enrollment status and the conditions under which studies may be resumed.
## Financial Information

### UNDERGRADUATE TUITION (As of Fall 1992-93)

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<th>No.</th>
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ABOVE TOTALS DO NOT INCLUDE LAB FEES AND/OR SCHEDULE ADJUSTMENT FEES.

### GRADUATE TUITION (As of Fall 1992-93)

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<th>Total Non-Resident</th>
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ABOVE TOTALS DO NOT INCLUDE LAB FEES AND/OR SCHEDULE ADJUSTMENT FEES.

The University reserves the right to change its fees, charges, rules and regulations at the beginning of any term and without prior notice. Generally, the Board of Trustees of the University of Alabama System considers proposals for changes in fee structure at its May or June meeting. An estimated average cost of books per term for full-time students is $150.00.
An estimated average cost of books per term for full-time students is $150.00.

These fees do not apply to any short-term, off-campus, or noncredit offering. For additional information on these courses, see section on Division of Continuing Education.

BILLING AND PAYMENT PROCEDURE

Students participating in early registration will receive in the mail (see mailing date in calendar in the timetable of classes) a schedule of courses, and a tuition bill. Tuition and other charges should be paid in full by the close of business on the due date indicated on the statement. Students whose payments have not been received by the deadline may have their registration canceled, and such students will be required to complete a new set of registration materials during open registration hours.

Tuition and other charges will be payable at the time of registration for all who register during periods of open registration.

Charges resulting from dropping, adding, or other changes will be due at the time the change is made.

Many students have all or part of their tuition and other costs paid by various sponsoring agencies (including tuition assistance for faculty, staff and their dependents). It is the student’s responsibility to see that the Bursar's Office receives the approved tuition assistance authorization from his sponsor. In many cases the sponsor does not pay the entire statement. These students should contact the Bursar’s Office to determine the unpaid amount and make full payment before the due date to avoid cancellation of their registration.

Fees for courses being audited are the same as those being taken for credit.

Full-time students may include full-term, regular credit courses offered through the Division of Continuing Education under the maximum fee structure of UAH. Standard fees and fee conditions, however, do not apply for short-term, off-campus, or noncredit offerings.

Other Charges

| Application (non-refundable) | $20.00 |
| Change of schedule (non-refundable) | $20.00 |
| Drop/add/change to audit/reinstatement (non refundable) | 20.00 |
| Late registration (non-refundable) | 20.00 |
| Credit by examination or validation, per semester hour | 10.00 |

Laboratory and Special Fees

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Engineering Equipment Fees

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| Replacement of I.D. card | $15.00 |
| Transcript | No Charge |
| Duplicate Diploma | $7.50 |
Thesis binding (4 copies) ................................................................. 17.50  
each additional copy ................................................................. 6.00  
Vehicle registration  
(Regulations concerning traffic and parking are available at the Campus Safety Office) ......................................................... 25.00  

College of Nursing  
Liability Insurance (per year) ........................................................... approximately 60.00  
College of Nursing Pin (graduation) ......................................................... 30 - 100.00  
Annual health examinations ................................................................. variable  

Withdrawals and Refunds  
Students may withdraw from one or more classes until the end of the sixth week of classes. A student desiring to withdraw from one or more classes must complete a withdrawal request form at the Office of Student Records, Room 116, University Center. The date of withdrawal is the date the written request is received at the Office of Student Records, and the date of withdrawal will determine the amount of fees cancelled.  
Basic course fees are subject to cancellation only up to the end of the second week of classes (10 class days). Withdrawal from classes does not cancel any registration fee, late registration fee, course change fee or withdrawal fee that may have been charged.  
No fee is charged for withdrawals prior to open registration day. On and after registration day a $20.00 fee is charged.  

University Housing  
For current rate information contact the Housing Office at: The University of Alabama in Huntsville, Huntsville, Alabama 35899, (205) 895-6108.  
In addition to rental charges, each occupant is charged for gas and/or electricity. Residents desiring a telephone assume responsibility for proper installation of telephone and payment of all bills.  

Financial Aid  
Undergraduate Student Aid  
UAH has several programs to assist students in financing their college education. Comprehensive, updated information on all financial aid offered through the Office of Financial Aid is available in a booklet published annually. It includes detailed information about kinds of aid, eligibility guidelines, application procedures, criteria for awards, disbursement methods and regulations, and institutional policy followed in administration of aid. These booklets and necessary forms are available in the Office of Financial Aid.  
Students of academic promise who can demonstrate financial need are encouraged to apply for assistance. Realistic financial planning is an essential part of college preparation. UAH helps qualified students find employment, scholarships, and loans as its resources permit. In planning a program of financial assistance, consideration should be given to the advisability of combining scholarships, loans, and part-time employment since one kind of aid alone is inadequate in extreme cases.
Students should make financial plans well in advance of entering the University. They are advised to write the Office of Financial Aid requesting a copy of the financial aid booklet at the time of application to the University. Applications for student aid should be filed at the Office of Financial Aid before the priority deadline April 1, for the following school year. No award implies automatic renewal; a new application must be submitted by this deadline each year.

American College Testing Need Assessment

UAH participates in the American College Testing (ACT) Need Assessment Program. The amount of financial aid granted a student is based upon financial need, which ACT assists colleges and universities in determining. Students are required to submit a Family Financial Statement (FFS) to ACT designating UAH (Code 0053) as a recipient of the needs analysis report. The FFS may be obtained from a secondary school or the Office of Financial Aid at UAH.

Types of Financial Aid

Scholarships

Most scholarships at UAH are awarded for the academic year (nine months) but are seldom available for the summer term. Nearly all scholarships are awarded on a merit-need basis. Most available scholarships vary from $100 to $2,500. Scholarship applications are available at the Office of Financial Aid. The deadline for receipt of applications is February 2. The following scholarships are awarded annually:

- The *Kelly Zettle Memorial Scholarship* was established in memory of Jacqueline Kelly Zettle from donations to the University. It is awarded each year to a student or students pursuing a music major.

- The *Gerhard B. Heller Memorial Scholarship* was established in memory of the late Gerhard B. Heller from donations to the University from family and friends. It is awarded annually for one year beginning with the fall term to a full-time junior or senior majoring in physics or chemistry.

- The *Samuel Palmer Memorial Scholarship* is a scholarship trust fund established in 1967 by the Board of Trustees of the University of Alabama. Interest from this fund is used for two scholarships awarded annually to UAH students. The recipients are selected on the basis of scholastic standing and leadership and must be full-time undergraduate students.

- The *JoAnn Sloan Memorial Scholarship* was established in memory of JoAnn Elizabeth Sloan from donations to the University from family and friends. The award is given annually to full-time students majoring in nursing.

- The *Institute of Industrial Engineers Scholarship*—The North Alabama chapter of IIE provides a tuition scholarship each year. To be eligible, the student must be a full-time junior or senior majoring in industrial and systems engineering.

- The *Gregory David Johnston Scholarship* was established in honor of Gregory David Johnston and awarded annually by the UAH Foundation to a senior student at Huntsville High School. This scholarship is awarded to a student who demonstrates outstanding leadership ability.

- The *Felix L. Newman Scholarship* was established by a gift from Felix L. Newman, a longtime resident of Huntsville and devoted friend of the University. It is awarded each year to a student at the junior level or above pursuing a degree in the humanities.

- The *University Women's Club Scholarship* is a tuition scholarship awarded annually by the University Women's Club to a full-time student at UAH with sophomore standing having a minimum of 3.0 grade-point average. The recipient must be an academically deserving student who has demonstrated leadership or a potential for leadership.
The University Alumni Scholarship—The Alumni Association provides several scholarships each year to full-time undergraduate students. The recipients are selected on the basis of need, leadership ability, and academic achievement.

The August S. Ries Scholarship is an annual scholarship awarded each year by the Huntsville chapter of the Alabama Society of Professional Engineers to a full-time freshman engineering student who has a minimum 3.0 grade-point average.

The University of Alabama Huntsville Foundation Scholarship is awarded annually to high school seniors from Madison County who plan to attend UAH. Criteria for eligibility consists of scholastic ability, leadership, and financial need. Selection of winners is made by the high schools.

The George W. Ditto Scholarship, an endowed scholarship, was established in memory of George W. Ditto, a man who devoted his life to the teaching profession. Two full-tuition, one-year, non-renewable scholarships are offered annually to two science or engineering majors.

The Mildred D. Simmons Memorial Scholarship was established by a gift from William K. Simmons, Jr., of Huntsville and by other devoted friends and relatives. Mrs. Simmons was a graduate of Crawford W. Long School of Nursing and practiced in Huntsville for many years. The scholarship is awarded each year to a student in the College of Nursing.

The UAH Leadership Scholarship—The Division of Enrollment Management awards several leadership scholarships yearly. These are one-year, nonrenewable scholarships.

The UAH Presidential Scholarship Program—Full-tuition scholarships are awarded to National Merit Semifinalists and National Achievement Semifinalists who graduate from high schools in the UAH service area. The scholarships are renewable based on cumulative grade-point average.

Leroy Simms Scholarship Fund—An endowed fund established to recognize the many contributions of Mr. Leroy Simms to The University of Alabama in Huntsville. The full-tuition scholarship is awarded annually to the National Merit Semifinalists or National Achievement Semifinalists with the highest composite ACT score.

R. Wayne Sanders Memorial Scholarship—An endowed fund established by Mr. and Mrs. M.W. Sanders in memory of their son, R. Wayne Sanders. The full-tuition scholarship is awarded annually to a junior or senior pursuing a degree in the liberal arts. The recipient must exhibit outstanding leadership traits.

Thomas and Minnie Rast Scholarship Fund—An endowed fund established to recognize the many contributions and dedicated service of Mr. and Mrs. Thomas E. Rast to The University of Alabama in Huntsville. Full-tuition scholarships are awarded to junior and senior level students pursuing an undergraduate degree at UAH.

Scottsboro Rotary Club Scholarship—Full-tuition scholarships awarded annually to two Scottsboro High School seniors who have outstanding academic and extracurricular high school records.

Arab Rotary Club Scholarship—Full-tuition scholarships awarded annually to Arab High School seniors who have outstanding academic and extracurricular high school records.

Dr. Braxton Smith Scholarship—Full tuition scholarship awarded annually to Arab High School senior who has an outstanding academic record.

James D. Hayes Scholarship—An endowed fund established to recognize the many contributions and dedicated service of Mr. James D. Hayes to the University of Alabama in Huntsville. The full-tuition scholarship is awarded to a junior or senior engineering major.

William Penn Nichols Memorial Endowed Scholarship—An endowed fund established by Mrs. Josephine Nichols Holliman to honor the memory of her father, William Penn Nichols.
One full-tuition scholarship is awarded annually to a deserving student with preference given to descendants of the late William Penn Nichols.

Decatur Scholarship—Full-tuition scholarships awarded annually to Decatur, Alabama, seniors who have outstanding academic and extracurricular high school records.

Frances C. Roberts Endowed Scholarship—An endowed fund established by the History Department of The University of Alabama in Huntsville to honor Dr. Frances Cabaniss Roberts for her many contributions and dedicated service. A full-tuition scholarship is awarded annually with preference given to a junior or senior history major.

William R. Gillies Society of Manufacturing Engineers Scholarship—A one year scholarship established by the North Alabama Society of Manufacturing Engineers. The scholarship is awarded annually to a mechanical engineering or industrial and systems engineering major who has earned sixty credit hours or more.

Outstanding Junior College Scholarship—Full-tuition scholarships awarded to graduating junior college students in Alabama.

Hal Dreifus Jewelers Scholarship—A scholarship fund established by Dreifus Jewelers for a full-time undergraduate enrolled in the College of Liberal Arts.

W.L. and Lucille Howard Memorial Scholarship—An endowed fund established by the University of Alabama Huntsville Foundation in memory of Mr. and Mrs. Howard. This fund offers several full scholarships yearly to junior or senior level students enrolled in the College of Administrative Science.

Isidore and Mamie Wind and Children Scholarship Fund—An endowed fund established by a trust in memory of the Wind family. Several full scholarships are awarded yearly to full-time UAH students.

Irene Wright Endowed Scholarship—An endowed fund established in memory of Mrs. Irene Wright by private donations and assets of the University of Alabama Huntsville Foundation. One full-tuition scholarship is available yearly to an entering freshman enrolling in the College of Liberal Arts.

Bromberg Scholarship—An endowment established by Bromberg and Company for the awarding of yearly scholarship assistance to a student majoring in fine arts.

Elizabeth M. Fisher Memorial Scholarship. An endowed scholarship fund established by the Fisher Family as a memorial endowment for Mrs. Elizabeth M. Fisher. A tuition scholarship is awarded yearly to a graduate student in the College of Nursing.

Boeing Scholarship—A scholarship fund established by the Boeing corporation for junior and senior level students enrolled in the College of Engineering.

The Carl T. Jones Engineering Scholarship—An endowed fund, established from donations to UAH and the University of Alabama Huntsville Foundation in memory of Carl T. Jones, prominent Huntsville businessman and civic leader. An award is made annually to a student majoring in civil engineering.

The Wernher von Braun Space Sciences Scholarship—An endowed scholarship, created by the National Space Club Huntsville Committee and friends in honor of Dr. von Braun. This scholarship is awarded to a senior in a space related field.

The Spencer Scholarship—An endowed fund, established to recognize the untiring service of the Spencers to the University of Alabama in Huntsville. It is awarded annually to a UAH junior or senior.

The Bell Endowed Scholarship was created by a bequest to honor the memories of Robert Kirk Bell and Carolyn Pride Bell. This endowed scholarship is awarded to an undergraduate student majoring in liberal arts.
The Charles E. Shaver, Sr. Presidential Scholarship—An endowed fund, established by the University of Alabama Huntsville Foundation to honor Mr. Shaver, former long-term chairman of the Foundation. The scholarship recognizes entering freshman of exceptional ability and is renewable for four years.

The Pruitt Memorial Scholarship—An endowed fund, established in memory of Ms. Christine Martin Pruitt, a UAH graduate. One scholarship is awarded annually to an undergraduate in the College of Nursing.

The Instrument Society of America Scholarship was created by the local chapter of the Instrument Society of America. This endowed fund provides two scholarships annually, one to a student in the College of Engineering and one to a student in the College of Administrative Science.

The NEC Electronics Scholarship is an endowed fund established by NEC Electronics, Inc. to recognize and support an outstanding student initially in the field of electrical engineering who exhibits qualities of scholarship, personal integrity, and excellence in all endeavors.

The M. Louis Salmon Scholarship—An endowed fund, created by the Watts family in honor of Mr. Salmon, third chairman of the UAH Foundation, for his outstanding service to higher education and his leadership in civic affairs.

The Humana Scholarship—an endowed fund established for junior and senior level students enrolled in the College of Nursing.

William T. Dale Scholarship—an endowed fund established for a student enrolled in the College of Liberal Arts who participates in the UAH Wind Ensemble.

The 3M Scholarships are funded by 3M Company on behalf of its facilities in Alabama. Awards are made each year to students in the College of Engineering.

The Yvonne M. Kheir Memorial Scholarship—An endowed fund, was created by members of the Kheir family in honor of their mother. This award is presented to a student majoring in electrical and computer engineering.

The Gary Lindsay Memorial Scholarship is an endowed fund created by friends and co-workers at Teledyne Brown Engineering to honor Mr. Lindsay. This award is presented annually to a student in engineering.

The Margaret Bond Economics Scholarship is an endowed fund established in honor of Dr. Bond, former chairperson of the Department of Economics and Finance. The recipient, a junior or senior majoring in economics, is selected by the faculty of the College of Administrative Science.

The Jo Cooper and Henry Dark Scholarship—An endowed full tuition scholarship, established by the Edwin W. Bleier family in honor of Mr. and Mrs. Dark is awarded annually to a non-traditional student in the College of Administrative Science. The scholarship is renewable for four years if the students maintains a 3.0 GPA and needs financial assistance.

The Dr. J.E. Whitaker Scholarship—An endowed fund established in memory of Dr. J.E. Whitaker, a prominent Huntsville physician for may years. Full-tuition awards are presented annually to needy students.

Harold J. Wilson Scholarship—Named in honor of Dean Harold J. Wilson, a nationally recognized educator and scientist, awarded to academically promising students who are entering UAH as freshmen. Up to two academic-year scholarships will be awarded each year. The scholarship(s) may be renewed for each of the three remaining years of undergraduate study, provided the student maintains a satisfactory academic record. The scholarship(s) will be awarded on the basis of academic accomplishments and community service.
The **Harry C. Fisher Memorial Scholarship** was established in memory of Mr. Fisher by his family and with memorial contributions. A partial scholarship is awarded each year to a student in the College of Science. Preference is given to minorities.

The **Dr. Robert Brown Scholarship** was established by colleagues, students and friends of Dr. Brown upon his retirement as a professor in the College of Engineering. A partial scholarship is awarded each year to a junior or senior majoring in industrial and systems engineering, where Dr. Brown taught for 23 years.

The **Reggie F. Gilland Memorial Scholarship** was established by the Gilland family to honor the memory of Mr. Gilland, who graduated from the UAH College of Engineering in 1979. It is a full tuition scholarship awarded annually to a junior in electrical engineering.

**State Nursing Scholarships**

An act was passed by the Alabama legislature in 1957 to provide scholarships for basic nursing education. These scholarships are each $600 to be awarded to applicants from the state-at-large. Applicants must be Alabama residents and accepted for admission by the UAH College of Nursing. Continuation of the scholarship for three years after the first year is subject to annual review and contingent upon the student’s progress and aptitude. A scholarship student must agree to practice professional nursing in Alabama for at least one year immediately after graduation from the UAH College of Nursing. If the recipient is unable to fulfill the obligation, it may be satisfied by repaying the amount of the scholarship received to the UAH Scholarship Fund.

**Loans**

Although it is sometimes necessary to borrow money to finance an education, caution is advised. Generally a student should not rely primarily on loans and is advised not to borrow more than half of what is needed to meet expenses.

The Perkins Loan Program is available to all students enrolled at least half-time and who have exceptional financial need as indicated by the Family Financial Statement. An undergraduate may be eligible to borrow a maximum of $9,000 over several years. Graduate or professional students may be eligible to borrow a maximum of $18,000, including their undergraduate loans. The program contains a provision that part of the loan plus interest may be canceled if the borrower performs military service in hostile areas. Forgiveness is also provided for teachers of handicapped or disadvantaged students and for those teaching in other special programs designated by the U.S. Office of Education.

The Stafford Loan Program provides federal backing for loans made through private lending agencies such as banks, savings and loans, and credit unions. A maximum of $2,625 per academic year may be applied for in most states for freshmen and sophomores, $4,000 for juniors and $7,500 for students enrolled in graduate school if the educational costs warrant borrowing this much money. Total loans outstanding may not exceed $17,250 for undergraduates. The aggregate maximum may be extended to $54,750 for students who borrow for graduate study.

**Loans and Scholarships for Medical Students**

Information about financial assistance for medical students is available from the Office of Medical Student Affairs, Clinical Science Center.

**Emergency Loans**

*Emergency Student Loan Fund*—Any full-time student of UAH officially enrolled and physically present on campus is eligible to apply for an emergency loan. These loans are made for emergencies only. The maximum amount of the loan is $200, but normally loans will be made for $100 or less for a maximum of ninety days or until the end of the term, whichever comes first. Applications are available from the Office of Financial Aid.
Grants

A Supplemental Educational Opportunity Grant—provides aid to undergraduate students who would not, except for the grant, be financially able to attend college. A student must be accepted for enrollment, show evidence of academic promise, and be capable of maintaining good standing in the chosen course of study. Grants may be renewed for the four years of undergraduate study, subject to the availability of funds, unless a major change in the family’s financial condition causes the student to be ineligible. Grants are awarded in compliance with eligibility based on federal guidelines.

The Pell Grant Program—assists eligible students by providing help in meeting the cost of postsecondary education. To be eligible, a student must meet the following criteria: (1) establish financial need by means of the Pell application; (2) be enrolled in an eligible program; (3) be a U.S. citizen or in the U.S. for other than a temporary purpose and intend to become a permanent resident or be a permanent resident of the Trust Territories of the Pacific Islands.

The Pell application is submitted to a processing agency which calculates the student’s aid index. The institution then uses this SAR report to calculate the Pell Grant award based on full or part-time enrollment and the cost to attend the institution. All eligible students are awarded grants.

The Alabama Student Assistance Program—is a state-federal aid program designed to provide Alabama residents financial assistance for undergraduate postsecondary education. Grants are awarded for one year. The grants are renewable, but new applications must be made each year. All awards are determined by student eligibility requirements, available funds, and student need. Students should contact the Office of Financial Aid for information regarding eligibility, application, selection, and awards procedures.

Federal Financial Aid Repayment

Federally funded student financial aid (Pell, SEOG, Perkins, Stafford, SLS) to a student who withdraws after registration but before the tenth day of an academic term will be repaid to the respective program source. When withdrawal or reduction of class load occurs after the tenth day of the term, full tuition charges will be paid from the aid source. The unused portion of the aid will be repaid to the respective aid source. Specific regulations governing this policy may be found in Student Financial Aid, a brochure available in the Office of Financial Aid.

Work-Study Program

The College Work-Study Program provides employment for students who need financial assistance. A student works part-time while attending the University and during vacation periods. Students engaged in this program work on campus. In determining eligibility, preference will be given to students with the greatest financial need.

Tuition Assistance

Some businesses and industries provide tuition assistance to employees attending UAH. An employed student should consult the personnel office of his place of employment to determine its policy regarding tuition assistance.

Vocational Rehabilitation

Students with a physical disability may obtain grants-in-aid covering fees, books, and supplies through the Vocational Rehabilitation Service, which is supported by federal and state appropriations. For further information, write to: Alabama Vocational Rehabilitation Service, 407 Governors Drive, S.W., Huntsville, Alabama 35801 or the Director of Vocational Rehabilitation, Room 416, State Office Building, Montgomery, Alabama 36104.
Veterans Affairs

UAH offers a full range of services to the student attending under the Veterans Administration Educational Assistance Program. These services include veterans’ advisement, educational loans, and the Veteran Tutorial Program.

Under the current Veterans Educational Assistance Programs, which affect most veterans, the veteran receives an allowance directly from the government. The veteran is responsible for paying fees directly to the University and meeting payment deadlines applicable for all students.

The Veterans Administration will make full payment only when the student carries a full academic load. To facilitate the prompt and accurate reporting of the student’s status and course load, the veteran must complete a brief form every term enrolled. This form must be turned in to the veterans affairs clerk in the Office of Financial Aid, Room 124, University Center.

It is the student’s responsibility to remain in good standing with the Veterans Administration and to respond to notification of changes in regulations. For additional information, write to: Veterans Administration Regional Office, 474 South Court Street, Montgomery, Alabama 36104.

Many students who are children of veterans of World War I, World War II, or the Korean War may be eligible for benefits under the War Orphans Educational Assistance Act (PL 634). Write the nearest Veterans Administration Regional Office for additional information.

The Alabama G.I. and Dependents Education Benefits Act grants tuition assistance to eligible veterans, their children, widows and wives. Tuition is paid directly to the school. For additional information, write to: Assistant to the Director, Department of Veteran’s Affairs, P.O. Box 1509, Montgomery, Alabama 36102.
Academic Advisement and Information Center

Academic advising is available to students in the Academic Advisement and Information Center, in advising offices in the Colleges of Nursing, Engineering, and Administrative Science and in the department or program in which a major has been declared. Special advising is provided in the professional areas of law and medicine; and career counseling is available through the Office of Career Planning and Placement. Freshmen and undeclared majors are advised in the Academic Advisement Center or, in the case of engineering and nursing freshmen, in the advising offices of the Colleges of Engineering and Nursing. When students declare a major (program of study), they are assigned a faculty advisor in their major department or program. All students are encouraged to maintain contact with their advisors and to take advantage of the opportunities for academic advising which the University provides.

Located in Room 118 University Center, the Academic Advisement and Information Center is staffed by a team of experienced faculty. They assist prospective and enrolled students in course and program planning, disseminate accurate information about academic programs and procedures, make referrals to appropriate offices and services, and advise and register students during registrations and orientations. Appointments may be made by calling 895-6290.

All freshmen students except those enrolled in the Colleges of Engineering and Nursing are required to visit the Advisement Center at least once each term to review their academic progress and to plan their schedule of courses for the next term. These schedules must be signed by an advisor in the AAIC in order to be processed by the Office of Student Records. Undergraduates enrolled as special students must also have schedules validated each term in the Academic Advisement Center as long as they remain in the special-student category. Sophomore students outside of the three professional colleges (Administrative Science, Engineering and Nursing) who have not declared a major will be advised in the Advisement Center and will continue to have their registration cards signed by advisors in the AAIC.

Prospective transfer students who wish to gain information concerning the general requirements of various undergraduate degree programs may seek the services of the Academic Advisement Center. These students are further referred to department chairmen who can aid them in program planning in their major fields of interest. Transfer students will be advised and registered by the appropriate faculty advisor. Once enrolled at the University, transfer students beyond the freshmen level who are not enrolled in the Colleges of Engineering, Nursing, and Administrative Science, are advised by the Academic Advisement Center for the first term.

Academic rules and regulations stated in this catalog are subject to review for extenuating circumstances. Students are encouraged to use the services of the Academic Advisement and Information Center for the appropriate procedure of appeal. Academic appeals originate with the student and will be processed through the student's major department, the dean of the college and the Office of the Provost and Vice President for Academic Affairs, in that order.

Students beyond the freshman level who have not filed a Program of Study and are enrolled in the College of Administrative Science must have schedule cards approved each semester by a faculty adviser in that school. For an appointment, call 895-6024.
Policies

Nondiscrimination

The University of Alabama in Huntsville is committed to equal employment and educational opportunity. Its policy is one of nondiscrimination with regard to any person on the basis of race, color, national origin, religion, sex, or age, and with regard to any otherwise qualified handicapped individual solely on the basis of handicap. This equal opportunity policy extends to the recruitment and admission of students, the recruitment and employment of faculty and staff, and the operation of all programs and activities. Additionally, the University is an affirmative action employer of protected minorities and women.

The foregoing commitment is designated to meet the nondiscrimination affirmative action requirements of applicable federal law, including the following statutes (with implementing regulations) and executive orders, as amended: Title VI and Title VII, Civil Rights Act of 1964; Executive Order 11246; the Age Discrimination in Employment Act of 1967 and the Age Discrimination Act of 1975; Title IX, Education Amendments of 1972; the Equal Pay Act of 1963; the Rehabilitation Act of 1972; and the Vietnam Era Veteran Readjustment Assistance Act of 1974.

Inquiries or complaints concerning the application to these federal requirements and this policy should be directed to one of the following persons:

Dr. Carolyn White
Faculty EEO Officer
123 Madison Hall
The University of Alabama in Huntsville
Huntsville, AL 35899 (205-895-6337)

Ms. Gerry Moore
Staff EEO Coordinator
135 Madison Hall
The University of Alabama in Huntsville
Huntsville, AL 35899 (205-895-6545)

Marital, Parental, or Temporary Disability Status

The University does not discriminate against any student or exclude any student from its educational program or extracurricular activity on the basis of a student’s sex, marital, or parental status. Pregnancy or related conditions are treated the same as other temporary disabilities. The University may require written approval of a student’s physician regarding participation in an activity or educational program which might adversely affect the safety or health of a student with a temporary disability.

Confidentiality of Records

The Family Educational Rights and Privacy Act of 1974 is a federal law which protects the confidentiality of student educational records. To implement this law UAH has formulated and adopted a written institutional policy governing the handling of these records. Copies of this policy document are available to students at the Office of Admissions and Records, and it should be referred to for a more comprehensive treatment of this subject than is given in the summary statement here.

Under this law and university policy, a student has a right of access to his educational records and may inspect and review the information contained in them. The term educational record generally refers to any record maintained by the institution directly pertaining to an individual as a student, other than that made by institutional, supervisory, or administrative person-
nel remaining in the sole possession of the maker; by campus security; or by a physician, psychiatrist, or any other such professional medical personnel. This right of access does not extend to financial information submitted by the student's parents or to confidential letters and recommendations collected under established policies of confidentiality and placed in his files before January 1, 1975. Furthermore, the student may at his discretion waive the right to any confidential letters of recommendation.

If a student believes his records contain inaccurate, misleading, or otherwise inappropriate data, he may bring the matter to the attention of the records official concerned. If by informal discussion with this official the student does not obtain the corrective action desired, he is entitled to a hearing at which he may challenge the item he finds objectionable. The decision of the hearing official or panel shall be final. If the decision is adverse to the student, he may insert in his educational record an explanatory statement relating to the contested item. A student's privacy interest in his records is further protected by the rule against unauthorized disclosure. The University may not without the student's consent release his educational records or any personally identifiable information contained in them to other individuals or agencies. Disclosure to the following parties, however, is specifically excepted by the Privacy Act from this rule: (a) administrative and academic personnel within the institution who have a legitimate educational interest; (b) officials of institutions in which the student seeks to enroll; (c) persons or organizations to whom the student is applying for financial aid; (d) accrediting agencies; (e) organizations conducting studies relating to tests, student aid programs, instruction; (f) certain federal and state government officials; (g) any person where the disclosure is required for compliance with a judicial order to proper subpoena; (h) appropriate persons where a health or safety emergency affecting the student exists; and (i) parents of a dependent student. As to some of these parties, additional conditions must be met in order for the disclosure to be allowable in the absence of a written consent from the student. Personally identifiable information will be transmitted by the University to a third party only on the condition that the recipient not permit any other party to have access to it without the student's consent.

The University may release directory information to others without the necessity of obtaining permission from the student. Directory information is limited to the student's name, address (local and permanent), telephone number, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height statistics if he is an athletic team member, date of attendance, degrees and awards received, and the previous educational institution most recently attended. If the student does not wish this information to be released, he may so indicate on the form provided at the time of registration, and the university will withhold it during that particular term. This request for nondisclosure of directory information must be renewed each term.

The following officials have been designated as records officials for student records within their respective area:

- Associate Vice President for Academic Affairs
- Assistant Vice President for Enrollment Management (Admissions and Records)
- Director, Academic Advisement and Information Center
- Director, Cooperative Education
- Assistant Dean, College of Administrative Science
- Assistant to Dean, Engineering, Lower Division
- Engineering Department Chairs
- Associate Dean, College of Nursing
- Director of Student Affairs, College of Nursing
- Director, Continuing Education
- Vice-President, Student Affairs
- Director, Medical Student Affairs
Requests concerning educational records should be directed to the appropriate official listed above. Any student who believes that his rights under the Privacy Act have been violated by the University may notify and request assistance from the Provost and Vice President for Academic Affairs and may file a complaint with the Family Educational Rights and Privacy Act Office, Department of Health, Education, and Welfare, Washington, D.C. 20201.

**Academic Responsibility**

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) 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 term 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 Office of Student Records two terms before the expected date of graduation.
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. A graduate student found guilty of plagiarism or falsification of research data/results is subject to dismissal from the University.

**Testing Services**

The tests used for admissions, credit by examination, and placement which are administered through this office include: the American College Testing (ACT), the Miller Analogies Test (MAT), the Graduate Record Examination (GRE), the Medical College Admissions Test (MCAT), the College Level Examination Program (CLEP), the General Education Development (GED) Testing Program, Accounting Program Admission Test (APAT), the Mathematics Placement Test, the UAH Chemistry Placement test, and the National League for Nursing (NLN) profile examinations. Applications and information pertaining to the following testing programs are also available: the Graduate Management Admissions Test (GMAT), the National Teachers Examination (NTE), the Law School Admission Test (LSAT), the Test of English as a Foreign Language (TOEFL), Teacher Education Basic Skills Test (BST). Testing Services is located in Room 203, University Center, phone, 895-6725.
Placement Tests
All students who are beginning college-level course work in English, mathematics, chemistry, or a foreign language (if taken in high school) are placed at the level best suited to their academic preparation and background.

Placement in English is determined by ACT scores and high school grades. A placement test is required for entry into mathematics classes.

To register for Chemistry 121, a student must be placed in CH 121 from results of the Chemistry Placement Test, or must have taken CH 101 or its equivalent.

A student who has had formal training in French, German, Spanish, or Latin is placed on the level of that language according to the number of units and grades earned in high school. A student who takes a language other than the one in which he has had formal training will begin with level 101.

The Chemistry Placement Test and residual ACT Placement tests are scheduled once each term. The Mathematics Placement Tests are scheduled regularly. Students wishing to take these tests should register in the Office of Testing Services (895-6725) at least three days before the tests are to be given. Students will be notified at the time of the tests when they can expect to receive the results of the tests. There is a charge for the residual ACT. The chemistry placement test and mathematics placement tests are free. If a student has not received placement recommendations before enrollment, he should contact the Office of Admissions.

Credit by Examination
At UAH a student may obtain up to one-fourth (32 semester hours) of required degree credits by examination. There are three 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). These alternatives are subject to the following restrictions. Credit by examination is not allowed: 1) to receive credit when a student has successfully completed a course at a higher level than the one being challenged, 2) to raise a passing grade, 3) to remove failures received in a course during the period of current enrollment, or 4) to satisfy the residence requirements for graduation.

1) Credit by Department Examination
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 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.

Departments offering credit by examination on tests constructed by the department.

Biological Sciences .......................................................... Contact Department Chair
Computer Science .......................................................... All 100 and 200 level courses
Foreign Languages .......................................................... Contact Department Chair
Mathematics ................................................................. MA 033
Music .......................................................... Mu 101, 102, 103, 104, 110, 301, 302, 303, 304, 305, 306, 311, 312
Nursing .......................................................... Contact Nursing Student Affairs Office
Philosophy .......................................................... PHL 201, 320
2) Advanced Placement Program

Several UAH departments award credit to 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. The subjects in which credit is presently awarded are biological sciences, chemistry, mathematics, English composition and literature, computer science, history, physics, political science, music, and some foreign languages. Credit, if awarded, will be recorded without grades or quality points and will not, therefore, be included in calculation of the grade point average.

3) College Level Examination Program (CLEP)

The College Level Examination Program is a national program under which a person can receive credit for college level achievement. Anyone who has practical knowledge in an area through independent study, work experience, cultural exposure, and intensive reading, may substantially reduce the cost in both time and money spent on a college degree by taking one or more of these tests. The policy for CLEP credit varies with each institution. The policies listed herein are those of UAH. These tests are given monthly but must be registered for three weeks or longer before the testing date. For a complete listing of dates and deadlines, contact the Office of Testing Services in Room 203, University Center.

CLEP General Examinations

The General Examinations are objective tests that measure achievement in five basic areas of the liberal arts: English composition, humanities, mathematics, natural sciences, and social sciences and history. Credit by General Examination can be given only if examinations were taken before entering college or during first term in college, providing the student has not been enrolled in a comparable course for more than three weeks. The student may be awarded six hours elective credit per examination. To achieve credit for any of the general tests, the student must score a minimum of 549. No credit is awarded for scores below 549. Credit is recorded without grades or quality points and is counted as elective credit only.

CLEP Subject Examinations

Credit by CLEP subject examination is allowed only if the appropriate academic department has approved the CLEP test for use by the University. Credit awarded for CLEP subject examinations will be recorded on the student’s record without grades or quality points and will not, therefore, be included in calculation of the grade point average. If a student does not pass a CLEP test(s), no record is placed on his transcript. Subject examinations may be retaken six months after initial testing. The CLEP subject tests and minimum score for credit which are accepted as substitutes for UAH courses are listed below: (See Foreign Language section for additional information on CLEP.)

<table>
<thead>
<tr>
<th>Credit For</th>
<th>Minimum Score on CLEP Subject Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSC 101</td>
<td>54 (with essay)</td>
</tr>
<tr>
<td>HY 221</td>
<td>53 (with essay)</td>
</tr>
<tr>
<td>HY 222</td>
<td>53 (with essay)</td>
</tr>
<tr>
<td>EH 101-102</td>
<td>60 composite (with essay)</td>
</tr>
</tbody>
</table>

(Note: The English Department requires a composite score of 60 on the two examinations, Analysis and Interpretation of Literature (with essay) and College Composition, in order to receive six hours credit for EH 101 and 102. No credit is allowed unless both examinations are taken.)
For further information concerning CLEP, the AP program or department examinations, contact the Office of Testing Services, Room 203, University Center, telephone 895-6725.

**Student Classification**

An undergraduate student is classified as indicated in the following table when he has completed the number of semester hours shown.

<table>
<thead>
<tr>
<th>Student Course Loads</th>
</tr>
</thead>
</table>
| A full-time undergraduate student is one who is enrolled in courses totaling at least eight semester hours a term. A part-time undergraduate student is one who is enrolled in courses totaling one to seven semester hours. The maximum number of semester hours in which a student will be permitted to enroll in one term is 13, including simultaneous correspondence courses. Under exceptional circumstances, permission may be granted by the dean of the school in which the student is enrolled to take additional hours. (In calculating a student's load equivalents will be used for non-credit and audit courses.) A student enrolling for a minimum load each term should not expect to graduate in four years unless he enrolls in four summer terms in addition to the regular academic year. Students are responsible for independent study. Careful budgeting of time is necessary if the desired academic goals are to be reached. Accordingly, full-time students are advised to limit their employment. Experience has shown that approximately twenty hours a week constitutes an average work load that will allow needed time for adequate study. Students who for financial reasons need to be employed to a greater extent should reduce their course loads. To allow sufficient time for the amount and quality of work necessary to meet academic goals, fully-employed undergraduate students normally find that they should take no more than two courses. **Orientation**

A new student orientation program is held before the beginning of each term or during the first week of classes. Students accepted for admission will be invited to attend.
Registration

Dates of early and regular registration are listed in the UAH calendar. Any continuing or returning student eligible to register may take part in early registration. All past financial obligations to the University must be cleared before a student may register for courses.

A student who schedules courses during any registration period (early or regular) will have made a financial commitment to the University. If courses are dropped or changed, the student must submit these changes in writing to the Office of Student Records. Adjustments in fees, if any, will be made by the Bursar’s Office.

Schedule Adjustments

After a student has completed registration, all changes in his schedule must be made on a change-of-course form and recorded in the Office of Student Records. Advisor signature may be required.

Credit to Audit

A student is permitted to change a course from credit to audit only during the first two weeks of classes.

Removal of Course from Schedule

1. In the case of a cancelled class, submission of a change-of-course form by the student helps to correct his record.
2. In the case of a drop before class begins, a change-of-course form must be submitted before the first day of the term.
3. Except in the case of (1) or (2), removal of a course after the first scheduled meeting of a class is considered a withdrawal (see below).

Other Kinds of Changes

The following kinds of changes may be accomplished only during the designated hours of regular registration and the schedule adjustment period.

1. Change from one course to another.
2. Change from one section to another section of the same course.
3. Addition of course to schedule.
4. Change from audit to credit. Only students who are otherwise eligible to take the work for credit will be permitted to make this kind of change.

Withdrawal Policy

To withdraw from one or more classes, a student must initiate a formal request for withdrawal through the Office of Student Records. Class non-attendance does not constitute withdrawal nor does notification to the instructor. Unless the withdrawal procedure is followed, a student continues to be enrolled in class and a failing grade may be assigned.

Regardless of the reasons for withdrawing, students must carry out withdrawal procedures as follows:

1. Obtain a Request for Withdrawal Form from the Office of Student Records, 116 University Center.
2. If withdrawing during the first two weeks of the term, submit the completed withdrawal form to the Office of Student Records. A grade of W will be recorded.
3. If withdrawing during the third through sixth week of the term, the withdrawal form must be signed by the student’s academic advisor. (Depending on the student’s class rank and pro-
gram of study, the appropriate advisor is located in the Academic Advisement Center, the advising offices of the Colleges of Administrative Science, Engineering, or Nursing, or within the major department.) A grade of W or WF will be assigned by each instructor based on the student’s performance up to the date of withdrawal. A grade of WF is calculated in the grade point average in the same manner as an F.

4. Beginning with the seventh week of the term, a student may withdraw ONLY in exceptional circumstances and with the approval of the dean of the college in which the student is enrolled. If the dean signs the withdrawal form, a grade of W or WF will be assigned by the instructor based on the student’s performance to the date of withdrawal.

5. THE EFFECTIVE DATE OF WITHDRAWAL is the date the Request for Withdrawal Form with appropriate signatures is received in the Office of Student Records, which will then notify instructors that the student has withdrawn.

6. Students in the Cooperative Education (Co-op) program must secure the approval of the Director of Cooperative Education prior to withdrawal.

7. Veterans must secure the approval of the Veterans Advisor in the Office of Financial Aid, Room 124, University Center.

Retroactive Withdrawal

Undergraduate students may at times experience extraordinary problems during an academic term. Within two years of having completed such a term, a student may petition the Vice President for Student Affairs to withdraw retroactively from ALL classes taken during that term. A retroactive withdrawal is granted only under exceptional circumstances, such as extraordinary medical or personal problems. The petition should include clear and documented evidence whenever possible. If a retroactive withdrawal is granted by the Vice President for Student Affairs, the grades for all courses taken during the term in question will be changed to W’s.

Course Repeat Policy

Undergraduate students may repeat up to five courses in which they have earned grades of C, D, or F. After repeating these courses, the transcript will show both the original grade and the course repeat grade. Only the grade point and credit hours earned in the most recent enrollment, however, will count towards graduation and be averaged into the student’s overall grade point average. This policy applies only to courses repeated at UAH. Concurrent registration for multiple sections of a course is disallowed.

If students repeat more than five courses in which they have grades of C, D, or F, or if they repeat other courses, both the original grade and the repeated grade will show on the transcript and will be calculated in the student’s grade point average. Students are not allowed to take courses for which they have higher level credit. For example, a student can not take MA 119 when they have credit in MA 153.

A student wishing to exercise the Course Repeat option must file the intent to do so in Office of Records (UC 116) before the end of the late registration period.

Class 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.
Examinations

During each term, one or more announced examinations of class period length may be held. At the end of each term, a final examination period is scheduled for each course. Absences from a scheduled final examination without previous arrangement with the course instructor (except in extenuating circumstances) will be classified unexcused and a failing grade in the course will be assigned.

Any student whose final examination schedule is such that he is scheduled to take three examinations during a single day shall have the right to have the middle examination rescheduled. The date and time of the rescheduled examination shall be by mutual agreement between the student and the affected faculty member and must be agreed upon by the end of the ninth week of classes. It is the student’s responsibility to notify his instructor of this type of conflict, and it is the instructor’s responsibility to verify that the conflict actually exists. If a student is scheduled to take four examinations during a single day, then the same procedure shall apply except that the student shall now have the right to have both the second and third examinations rescheduled.

Grading System

The University of Alabama in Huntsville’s grading system includes grades of A, B, C, D, F, I, X, W, WF, S, U, P, AU, and N.

A Superior achievement. Four quality points given per semester hour.
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 his 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 term 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.
X Excused absence from examination. Assigned by the instructor when a student completes all course requirements except the final examination. This grade becomes an F unless the examination is completed by the time of the announced deferred examination date at the beginning of the term 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 should make arrangements directly with other instructors for additional make-up examinations.
W Withdrawal. Recorded by the Office of Student Records when a student withdraws from a course with passing work. (See Withdrawal.)
WF Withdrawal failing. Recorded by the Office of Student Records when a student withdraws from a course with failing work. (See Withdrawal.)
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. It will be counted as an F and computed in the GPA for undergraduates, but not graduate students.
P Passing work. Assigned in some courses. See Pass-Fail Option.
AU Audit. Course attendance as a listener. No credit given, no quality points assigned, no attendance requirement.
N No grade. Assigned by the Office of Student Records when a grade is not reported by the instructor.
Change of Grade

A student is permitted a maximum of one term from the date a grade is assigned to request a change of course grade. Grades submitted to the Office of Student Records can be changed only by submission by the instructor of 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 the dean of the College concerned and received in the Office of Student Records no later than two terms from the date the original grade was assigned.

Student Grade Report

At the completion of each term, a report of final grades is mailed to the address furnished by the student.

Grade Point Average

The grade point average (GPA) is computed by dividing the total number of quality points earned by the total number of semester hours attempted. Courses in which a grade of W, P, S, or AU is assigned are not included.

Academic Achievement

Honor Scholar

An undergraduate student in good standing earning 8 or more semester hours in a term with a GPA of 3.50-4.00 is distinguished by being identified as an honor scholar. A GPA of 4.00 is noted with an asterisk "*".

A student who takes less than 8 semester hours a term and establishes a GPA of 3.50-4.00 at the end of the term in which a cumulative total of at least 8 semester hours are completed will be designated as an honor scholar. For this purpose, a part-time student’s work will be considered in blocks that do not overlap.

Scholar

An undergraduate student in good standing earning 8 or more semester hours in a term with a GPA of 3.00-3.49 is recognized by having his name placed on the list of scholars.

A student who takes less than 8 semester hours a term and establishes a GPA of 3.00-3.49 at the end of the term in which a cumulative total of at least 8 semester hours are completed, will have his name placed on the list of scholars. For this purpose, a part-time student’s work will be considered in blocks that do not overlap.

Graduation with Honors

A student graduating at the bachelor’s level with a GPA of 3.20 up to 3.50 will be graduated cum laude; a student with a GPA of 3.50 up to 3.80 will be graduated magna cum laude; a student with a GPA of 3.80 or higher will be graduated summa cum laude.

In determining eligibility for honors, a student’s overall GPA as well as his GPA on work taken at UAH will be computed and both computations must fall within the specified range.

Honor designations will appear on transcripts, commencement programs and diplomas.

Honors Convocation

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, who have been named to the dean’s list in each college, and who have attained excellence in academic programs are recognized.
Academic Probation and Suspension

In order to remain in good academic standing, an undergraduate student must maintain an average of 2.0 (C) on all work attempted at UAH, within the University of Alabama System, as well as on all college work attempted.

At any point that a student’s cumulative grade point average, either overall or at UAH, falls below 2.0 (C), the student will be placed on scholastic probation. (See exception applied to freshmen below.)

If a student’s grade point average on one term (minimum load 8 hours, accumulated for part-time students) is below 1.0 (D) with the cumulative GPA greater than 2.0, a warning message will be printed on the student’s grade report, and a list of such students provided to the school deans.

A beginning freshman will be reviewed for the first time at the end of the term in which he has attempted a total of 8 semester hours of work (accumulated for part-time). At this point, if the student has at least a 1.0 but less than 2.0, he is placed on academic warning and referred for appropriate advising. If such a student has a GPA of less than 1.0, he is placed on scholastic probation.

Once a student is placed on scholastic probation, such a student is reviewed in intervals of a minimum of 8 semester hours of work attempted (accumulated for part-time students). At such review points, three actions are possible:

1. If cumulative GPA is 2.0 on all work and on UAH work, student is removed from probation.
2. If cumulative GPA is less than 2.0 on all work, but block of work being reviewed is 2.0 or higher, student is continued on probation.
3. If cumulative GPA is less than 2.0 on all work or on UAH work and GPA on block of work being reviewed is less than 2.0, student is suspended.

A regularly admitted student suspended for the first time is automatically eligible to re-enter the second term following such suspension. A student admitted in any special category and suspended for the first time must petition the Admissions Committee for permission to re-enter after an absence of at least one term.

A student suspended the second time within the University of Alabama System is 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.

Indeterminate Academic Status Policy

For the purpose of determining academic status of those students on academic probation, a grade of I or X will be treated as a grade of F. Credit hours attempted will be charged to the student and zero quality points will be earned for the I and/or X. The action of academic suspension will be exercised when the results of calculation of grade point average (with the I or X treated as a F) indicates such action to be appropriate. (See Academic Probation and Suspension section of the catalog.) When the I or X is remedied and the grade change reported to the Office of Records, grade point average and subsequent standing will again be determined.

Academic Bankruptcy Policy

An undergraduate student may petition the Admissions and Scholastic Affairs Committee to declare academic bankruptcy. The Scholastic Affairs Committee after reviewing the petition and consulting with the Office of Admissions and Records will decide whether to grant the student academic bankruptcy. Under this policy, all college-level work completed at UAH prior to a date specified by the student is eliminated from computation of grade-point-averages and will not be applied toward a degree at UAH. Such work will not be expunged from the student’s
scholastic records and transcripts although it will be designated as work not included in the computation of grade-point-averages or applied toward degree requirements. There must be a minimum of two calendar years between the date of petition and the date specified by the student in the bankruptcy petition. Academic bankruptcy will only be granted once during a student’s academic career at UAH.

Conditional/Probational to Regular Status

Students admitted on condition or probation will be evaluated for regular student status after earning 15 or more 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 special student is not required to initiate this change. Each student’s record is reviewed via computer after each term.

Nondegree to Regular Status

A nondegree student will be evaluated for regular admission when all necessary regular admission application materials are received by the Office of Admissions.

Academic Appeals Process

Academic appeals will originate in written form by the student and will be processed through the chair of the student’s major department, the dean of the college, and the Office of Academic Affairs, in that order. Students classified as “special” will be routed through the most appropriate academic dean, but should begin by contacting the Academic Advisement and Information Center, 895-6290. Students should contact their major advisor for assistance.

Pass-Fail Option

To be eligible to take courses on a P-F basis, a student must: (1) have junior or senior standing; (2) not be on probation; (3) have an approved major or program plan appropriately filed. A student is limited to 12 semester hours of credit on a P-F basis. P-F system applies only to courses chosen as electives. Some departments limit P-F option to electives outside the department or school.

A grade of P may be changed to a regular grade only if the student changes his program to an area in which a regular grade is required. The change must be initiated at the dean’s office and must go through the normal grade change procedures. Once a P grade has been changed to a regular grade, it 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.

A student wishing to exercise a P-F option must make application at the Office of Registrar (UC 119) before the end of the late registration period.

Even though a student chooses to take elective courses on the P-F basis, instructor’s grade sheets will reflect the actual grade and the student may be informed of the regular grade upon request.

Visiting Student Program

Undergraduate

A cooperative arrangement exists with Alabama A&M University, Athens State College, Calhoun Community College, Oakwood College and the University of Alabama in Huntsville. A similar arrangement exists with the University of Alabama in Tuscaloosa and in
Birmingham. Under either of these arrangements, 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.
2. The course desired must be unavailable at the student’s home institution.
3. Visiting students are limited to one undergraduate course a term 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 hour course in basic military science.
4. The student must have an overall C average.
5. The student’s request must be approved by his adviser and other appropriate personnel.
6. Permission of the host institution is dependent upon availability of space for the visitor after its own students are accommodated.

Any student interested in participating in the Visiting Student Program should contact the Office of Student Records for information regarding the procedures to be followed.

Graduate

A cooperative arrangement exists with Alabama A&M University. Any student interested in participating in this program should consult the Graduate Catalog.

Army ROTC

Through the visiting student program, students at the University of Alabama in Huntsville may enroll in the ROTC Program in the Department of Military Science at Alabama A & M University. A prescribed course of study under the program prepares graduates for positions of officer leadership within the national defense structure. Depending upon qualifications students may enroll either in a basic or advanced course of study in the ROTC Program. Specific requirements and a description of the courses of study are provided in the current Alabama A&M catalog. Students interested in participating in this program should contact the Office of the Professor of Military Science at Alabama A & M University and the Office of Student Records at the University of Alabama in Huntsville.

Air Force ROTC

Air Force ROTC is available to students through a cooperative program with Samford University.

The Division of Aerospace Studies was established at Samford University in 1972. Qualified men and women students may be commissioned as second lieutenants in the United States Air Force by completing the Professional Officer Course (last two years of Air Force ROTC). After graduation, participants enter active duty as nurses or engineers or for training as pilots, navigators, missile officers or in numerous other career areas.

Note: Students must travel to Samford University for all classes. Call (205) 870-2859 for complete enrollment information.

Cooperative Education (Co-op) Program

The UAH Cooperative Education (Co-op) Program provides the opportunity for the academic work of qualified students to be enriched with productive periods of practical experience in business, industry, and government. Most students participating in the UAH Co-op Program alternate terms of full-time study with terms of full-time career-related work with leading employers in the Huntsville area. In addition to gaining practical experience in a field directly related to their major, Co-op students earn sufficient money to pay a substantial portion of their University expenses. At graduation, the majority of UAH Co-op students are offered full-time permanent employment with their Co-op employer.
Students majoring in all undergraduate disciplines are potential candidates for Co-op positions if they meet the program’s academic requirements. Any currently enrolled UAH student may apply to the program if the student has a minimum of 16 hours college credit, at least eight hours earned or in process at UAH, and if the student has an overall grade point average (GPA) of at least 2.5 on the 4.0 scale. Students also are obligated to the University and the employer to continue with the same company until graduation.

The UAH Co-op Program is open to UAH students, regardless of race, color, religion, sex, age, national origin, handicap or veteran status.

For more information, contact the Cooperative Education Office, The University of Alabama in Huntsville, Huntsville, AL 35899. The telephone number is (205) 895-6741.

Second Bachelor’s Degree

A student who holds a bachelor’s (or higher) degree from another institution and who wishes to earn a second bachelor’s degree at UAH, must request a detailed evaluation of his previous record before he may officially declare a major.

The program for the second bachelor’s degree must meet all requirements imposed on transfer students, e.g., hours in residence, (see Total Degree Requirements section), upper level hours, appropriate major and minor or cognate studies).

After a student has earned one bachelor’s degree at UAH, he may qualify for a second bachelor’s degree by completing (in addition to credits earned while pursuing the first degree) in residence a minimum of 25 percent of the total degree requirements for the second degree. The second degree must include a new major. The student must meet all other applicable requirements for the degree. Excess credits earned while pursuing the first degree are not applicable to the second degree.

Time Limit

The degree requirements for graduation are normally those specified in the catalog in effect when a student first enters UAH as a degree seeking student. 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.

Any exceptions to this policy must be approved by the student’s faculty advisor and college dean with the proper notation filed in the student’s program of study in the Registrar’s office. At any point in which a change in catalog becomes necessary, a new program of study must be completed and proper notation filed in the Registrar’s Office.

Transcripts

Official transcripts are issued and sent by the Office of Student Records to recognized institutions and agencies which require such documents. Transcripts are issued only upon the written request of the student involved.

Official transcripts are not issued to individual students however, they may request unofficial transcripts which do not bear the University seal.

No transcript will be issued for a person who has a financial obligation to the University.
64 Hour Transfer Limit

Once a student has enrolled and has accumulated a total of 64 semester hours of credit from all sources no additional credit may be transferred to UAH from a two-year institution. Exceptions to this policy must be approved prior to taking additional course work. Requests for exceptions must be in writing and approved by the UAH chairperson of the department where the course is taught, and by the dean of the college in which the student is enrolled. This policy is not intended to apply to those students working on a second baccalaureate degree.

Correspondence Study and Other Non-resident Credit.

Up to 25 percent of the credit applied toward a baccalaureate degree may be earned by means other than residence credit at an approved institution. Examples of other means are credit by examination, correspondence study, educational experiences in the armed forces, and professional certificate programs. Persons interested in taking correspondence study courses through the University of Alabama in Tuscaloosa may obtain a catalog from Testing Services, U.C. Room 203 or write to the College of Continuing Studies, Independent Study Division, University of Alabama, Box 870388, Tuscaloosa, AL 35487.

Course Numbering System

<table>
<thead>
<tr>
<th>Range</th>
<th>Year Student Normally Takes Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>001-099</td>
<td>Refresher (noncredit)</td>
</tr>
<tr>
<td>100-199</td>
<td>Freshman</td>
</tr>
<tr>
<td>200-299</td>
<td>Sophomore</td>
</tr>
<tr>
<td>300-399</td>
<td>Junior (upper level)</td>
</tr>
<tr>
<td>400-499</td>
<td>Senior (upper level)</td>
</tr>
<tr>
<td>-599</td>
<td>Advanced undergraduate credit or graduate credit. In the Colleges of Engineering and Administrative Science, graduate credit only. In the Colleges of Liberal Arts, Nursing, and Science may be either undergraduate or graduate credit. Check course listing for specific credit level.</td>
</tr>
<tr>
<td>-799</td>
<td>Graduate (NPG and advanced undergraduate students only by special permission.)</td>
</tr>
</tbody>
</table>

Undergraduate Colleges, Majors and Degrees

Detailed information concerning the various degree programs, including course descriptions, is organized according to colleges. See the table of contents for the listing of colleges.

The undergraduate academic programs of the University of Alabama in Huntsville are administered by five colleges with the following approved major programs:

College of Administrative Science

Areas of study in which majors are currently offered are:

- Accounting
- Economics
- Finance
- Management

Management Information Systems
- Marketing
- Procurement Management

Courses are also offered in business law and management science.
College of Liberal Arts
Areas of study in which majors are currently offered are:

- Art
- Communication Arts
- Education
- English
- Foreign Language/International Trade
- French
- German
- History
- Music
- Music Education
- Philosophy
- Political Science
- Psychology
- Slavic Area Studies
- Sociology
- Spanish

Other areas with course offerings are Japanese, Latin, linguistics, Russian, and physical education.

College of Engineering
Areas of study in which majors are currently offered are:

- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Industrial and Systems Engineering
- Mechanical Engineering
- Optical Engineering

College of Nursing
All majors receive instruction in the theory of nursing as well as laboratory practice in a variety of clinical settings to prepare them for beginning-level practice in professional nursing. Graduates of this first professional degree are qualified to apply for licensure as registered nurses.

College of Science
Areas of study in which majors are currently offered are:

- Biological Sciences
- Chemistry
- Computer Science
- Mathematics
- Mathematics Education
- Optical Science
- Physics

Courses are also offered in atmospheric and environmental science, and statistics.

Degrees Offered
Bachelor of Arts—art, biological sciences, communication arts, economics, education, English, foreign language/international trade, French, German, history, mathematics, mathematics education, music, music education, philosophy, political science, psychology, Slavic area studies, sociology, Spanish.

Bachelor of Science—biological sciences, chemistry, computer science, mathematics, mathematics education, optical science, physics.

Bachelor of Science in Business Administration—accounting, economics, finance, management, management information systems, marketing, procurement management.

Bachelor of Science in Engineering—unified programs with professional specializations.

Bachelor of Science in Nursing—unified professional curriculum.

Declaring a Major
Students should declare a major by the end of the freshman year. When the student declares a major, the student will be assigned an adviser by the relevant dean/department chair. At that time the complete advising folder will be transferred from the Academic Advisement and Information Center (AAIC) to the office of the relevant dean or department chair for permanent retention. Sophomores who have not declared a major will continue to have their registration cards signed in the AAIC.
Program of Study

The Program of Study form is a document prepared cooperatively by a student and a responsible faculty adviser, with the prior assistance of the Office of Student Records in preparing the evaluation of transfer credits and reviewing general education requirements. Academic departments of colleges must assume responsibility for ensuring that each of their students has an opportunity to develop a Program of Study form before the end of the student’s sophomore year. Once the Program of Study form has been accurately completed, checked in the dean’s office, and signed by the appropriate individuals, it becomes a contract between the student and the university with responsibilities bearing on both parties.

Double Major

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. 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.

Change of College

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 Student Records. 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.

Application for Graduation

Candidates for graduation must file their application at least six months prior to the time requirements are expected to be completed. Application forms may be obtained at the Office of Student Records. Early application will assist the student by confirming requirements remaining to be completed.

Students completing degree requirements in any term other than spring and fall terms will be given certified letters of completion and will receive diplomas at the next graduation ceremony.

Total Degree Requirements

1. Minimum requirements for the Bachelor of Arts, Bachelor of Science, Bachelor of Science in Business Administration, and Bachelor of Science in Nursing degrees are 128 semester hours; for the Bachelor of Science in Electrical and Industrial and Systems Engineering degree, 129 semester hours; for the Bachelor of Science in Chemical Engineering, 134 semester hours; for the Bachelor of Science in Civil and Mechanical Engineering degree, 133 semester hours; for the Bachelor of Science in Optical Engineering degree, 137 semester hours; and for the Bachelor of Arts in Music, 134 semester hours. A minimum of 25 percent of the total requirements and 12 of the last 18 hours must be completed at UAH. Also, 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 hours in his major and 6 hours in his minor or cognate studies). A minimum of 30 percent of the total degree requirements must be taken in courses numbered 300 or above.

2. The maximum amount of correspondence or credit by examination allowed towards a bachelor’s degree is 25 percent of the degree requirements.
3. An overall average of C is required for all courses taken: (a) at all institutions; (b) at UAH; (c) in all courses in the major discipline taken at UAH, and also in all courses taken in the major discipline, including UAH courses and transfer courses; and (d) in all courses in the minor discipline taken at UAH, and in all courses taken in the minor discipline including UAH courses and transfer courses; or in all courses listed in the cognate studies option taken at UAH, and in all courses listed in the cognate studies option, including UAH courses and transfer courses.

4. Additional degree requirements for each degree are described in the appropriate sections of this catalog.

## Requirements for Programs of Study Leading to the B.A. Degree

### General Education Requirements for B.A. Degree

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition: EH 101-102. Students in the Honors Program may substitute EH 105H</td>
<td>6</td>
</tr>
<tr>
<td>Survey of Literature: EH 205-206 or EH 205-241 or EH 205-230 or EH 240-206 or EH 240-230 or EH 240-241 or EH 250-251. Students in Education must choose EH 205-230</td>
<td>6</td>
</tr>
<tr>
<td>Origins and Development of the Contemporary World: HY 101-102</td>
<td>6</td>
</tr>
<tr>
<td>Foreign Languages: Two courses at 200-level (or placement at that level): French, German, Japanese, Latin, Russian, Spanish</td>
<td>6</td>
</tr>
<tr>
<td>Fine Arts: One course chosen from ARH 100, ARH 101, ARS 160, MU 100, MU 110, CM 122</td>
<td>3</td>
</tr>
<tr>
<td>Lower-Level Humanities: PHL 101 or a 200-level course in English, history, or philosophy (excluding PHL 201) outside the major and minor except for students completing all requirements for teacher certification</td>
<td>3</td>
</tr>
<tr>
<td>Upper-level Humanities or Fine Arts:* One course chosen from English (excluding EH 300, 301 or 302), history, music, philosophy, art, foreign language literature and culture courses, or CM 309 or 322, outside the major and minor except for students completing all requirements for teacher certification</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics: One course at Level II or above</td>
<td>3</td>
</tr>
<tr>
<td>Science: Two courses in a single discipline and one course in a second laboratory science chosen from astronomy, biological sciences, chemistry, environmental science, or physics</td>
<td>12</td>
</tr>
<tr>
<td>Social Science: Four courses chosen from PSC 101, PSC 135, SOC 100, SOC 200, PY 101, PY 102, ECN 142, ECN 143. May be included in the major and minor. Students completing all requirements for teacher certification may substitute ED 230 and ED 263 for any two of these courses except one economics course PSC 101 which is required for education students</td>
<td>12</td>
</tr>
<tr>
<td>Upper-level Social Science:* One course chosen from political science, psychology, sociology, economics, outside the major and minor except for students completing all requirements for teacher certification</td>
<td>3</td>
</tr>
</tbody>
</table>

*Students in the Honors Program may substitute H399.
Additional Requirement: One course chosen from MA 151 or above, 
PHL 201, ST 281, AHS 300, CS 100 or 108. Students who complete 
all requirements for teacher certification may substitute 
ED 360 or ED 510 .............................................. 3

Major Requirements for B.A. Degree .............................................. 30-37
A minimum of 30 semester hours in a program of study in a single 
department with at least 21 of those hours 300-level or above. 
Consult individual departments for specific requirements.

Minor Requirements for B.A. Degree .............................................. 18-21
A minimum of 18 semester hours in a single discipline with a 
minimum of 12 hours at the 300-level or above. Consult the 
Math Department for an exception.

In lieu of a minor, students may choose a minimum of 21 semester hours in cognate studies 
drawn from two closely related disciplines. A minimum of 12 hours must be 300 level of 
above. Cognate studies must be approved by the major department.

Electives
The student may select any elective courses outside the major and minor 
as needed to complete the University requirement of a minimum of 128 
hours for graduation. A minimum of 39 hours of course work in the 
program of study must be upper level.

Minimum Degree Requirements .................................................. 128

Requirements for Programs of Study Leading to the B.S. Degree

General Education Requirements for B.S. Degree ................................ Hours

English Composition: EH 101-102. Students in the 
Honors Program may substitute EH 105H. ...................................... 6

Survey of Literature: EH 205-206 or EH 205-241 or EH 205-230 or 
EH 206-240 or EH 230-240, or EH 240-241, or EH 250-251. 
Students in Education must choose EH 205-230. ............................ 6

Origin and Development of the Contemporary World: HY 101-102 .......... 6

Foreign Languages and Communication Skills: Two semesters of 
foreign language at the 200 level or three courses in communication 
skills: CS 108 or CS 113, CM 113, EH 301. .................................... 6-9

Fine Arts: 6 hours from two of the following options: ARH 100 or 
ARH 101; MU 100 or MU 110; PHL 101 or PHL 201 or PHL 311 ....... 6

Social Sciences: Two courses in one discipline chosen from 
economics, political science, psychology, or sociology. .................. 6

Mathematics: One course at level III or above, 
Consult individual departments for specific requirements ............... 3
Laboratory Science and Technical Studies

a) Two courses in a single laboratory science outside the major and minor (See specific major requirements) ................................................................. 8

b) Coursework outside the major or the minor in any department or program in the Colleges of Science or Engineering. The coursework must include at least one lab................................................................. 7-8

Major Requirements for B.S. Degree: See specific disciplines

Minor Requirements for B.S. Degree: See specific disciplines

Cognate Requirements for B.S. Degree: See specific disciplines.

Electives: Sufficient courses to meet minimum 128 hour degree requirement.

Requirements for Programs Leading to B.S.B.A., B.S.E., and B.S.N. Degrees

Requirements for professional programs offered are described in the appropriate sections of this catalog. These programs include the Bachelor of Science in Business Administration, the Bachelor of Science in Engineering, and the Bachelor of Science in Nursing.

Honors Program

Dr. Ann Boucher, Director
Morton Hall 336

The Honors Program at The University of Alabama in Huntsville provides academically talented undergraduate students with opportunities to develop their special talents and skills within an expanded and enriched version of the curriculum. Over the periods of their participation, students in the Honors Program pursue structured enrichment activities, Honors coursework that parallels regular offerings, special interdisciplinary seminars, and enhanced opportunities for independent study and research. Participating students also will find reward in the direct contact the Honors Program affords with other talented and highly-motivated students and with faculty.

Students who wish to participate fully in the program will earn by graduation a minimum of thirty hours in honors coursework. Individual courses of study will vary; however, all students should plan to take six hours of Honors Forum, and many honors students, depending upon their points of entry into the program, will take Honors English Seminar (EH 105H), two Honors interdisciplinary seminars, and an Honors Senior Project. Careful advisement is provided so that students can work out efficient and challenging courses of study that meet their degree requirements.

The Honors Program serves excellent students in all the colleges. Entering freshmen are invited to participate based on an evaluation of ACT or SAT scores and high school grades. Other students are admitted based on outstanding college performances. Students with cumulative college grade point averages of 3.3 or higher after earning 9 hours of credit at UAH are urged to discuss with the director how they may best participate in the Honors Program.

It is expected that honors students will be awarded financial aid under one of UAH's several programs to assist the academically talented. Students should discuss their financial aid needs with the director of the Honors Program or the director of Financial Aid.
Honors courses are offered in many disciplines. Please check the course schedules of each term or call the Honors Program for complete course listings. Honors versions of some general education courses are among the Program’s offerings. To review these courses, students should check the listings of courses provided in this catalog for each department. Other courses that have been developed for the Honors Program are listed below. University students who meet appropriate admissions standards for the Honors Program may enroll in honors courses. Students desiring to do so must contact the Honors Director.

Honors courses include:

**H 100 Honors Forum** 1 hr.
Regularly scheduled enrichment experiences for Honors Program students using lectures, concerts, exhibits, and other events. Provides exposure to a broad range of University disciplines. Prerequisite: admission to Honors Program.

**EH 105(H) Honors English Seminar** 3 hrs.
(See offerings of the Department of English) Required for all students who enter the Honors Program before completing freshman English.

**EH 250(H) Honors World Literature I** 3 hrs.
Focuses on major texts from the ancient world to 1700. Honors English 250 and 251 meet sophomore level literature requirements for the BS and BA degrees and constitute a sequence for engineering students.

**EH 251(H) Honors World Literature II** 3 hrs.
Focuses on major texts from 1700 to the present.

**H 399 Honors Interdisciplinary Seminar** 3 hrs.
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.

For more information concerning the Honors Program, please write the Director of the Honors Program, The University of Alabama in Huntsville, Huntsville, Alabama 35899; or telephone 205-895-6450.

**Professional Preparatory Programs**

**Prelaw Program**

To be admitted to an accredited law school, the student must have a bachelor’s degree, an acceptable score on the Law School Admissions Test (LSAT), and, in most cases, an accumulative grade point average of B or better. The LSAT should be taken in June or October of the year before the student plans to enter law school. Applications to law school, together with test scores, transcripts, and recommendations, should be submitted to law schools no later than January 1 of the year the student plans to begin law school. For specific admission requirements, the student should consult the catalog of the law school he wishes to attend.

In pursuing a prelaw program at the University of Alabama in Huntsville, the student will find that the best preparation during the first two years is through the completion of the general education requirements. The Statement on Prelegal Education of the Association of American Law Schools notes that “What law schools seek in their entering students is not accomplishment in mere memorization but accomplishment in understanding, the capacity to think for
themselves, and the ability to express their thoughts with clarity and force." The prelaw student therefore must develop perception and skill in the English language, insight into the institutions and values with which people are concerned, and the power to think clearly, carefully, and independently. Since these skills are fostered by the general education requirements, completion of them should be the primary concern of the beginning prelaw student.

No law school recommends a particular major or minor as preparation for admission. Students should therefore design their program of study with the aim of further development and promotion of the skills listed above. Care should be taken in choosing electives. Aside from the courses in the general education requirements, the prelaw program should include courses in political science, economics, philosophy (especially logic), American history, English, statistics, and computer science. One course in accounting is recommended. Since admission to law school is highly competitive, completion of recommended programs and requirements will not necessarily insure admission.

All prelaw students should seek academic counseling from prelaw advisers in the Departments of English, History, and Political Science. Materials and information are available in these departments or in the Academic Advisement and Information Center. The official Prelaw Handbook may be consulted in these offices or ordered from the Law School Admissions Services, Box 2000, Newtown, PA 18940.

Premedical and Predental Programs
Most students entering medical or dental schools do so after earning an undergraduate degree. After consulting the specific requirements of the desired medical or dental school, applicants interested in careers in medicine or dentistry will find that UAH offers programs that will prepare them for admission to the professional school.

Competition for admission to medical and dental schools is intense and students should realize that completion of the admission requirements does not insure acceptance. Since admission to the schools is not assumed, students are advised to complete undergraduate degree requirements. It is not mandatory for admission to medical school that pre-medical students major in science. However, the degree program must include required courses for medical school admission. Suitable major areas include biological and physical sciences, mathematics, social and behavioral sciences, and humanities.

It is not mandatory that pre-medical students major in science for admission to medical school. However, the degree program must include courses which are required for medical school admission. Suitable major areas include biological and physical sciences, mathematics, social and behavioral sciences, and humanities.

Typical of the requirements for admission to medical colleges are those which follow for the University of Alabama School of Medicine:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. General chemistry with laboratory 8 hrs.</td>
</tr>
<tr>
<td>3. Organic chemistry with laboratory 8 hrs.</td>
</tr>
<tr>
<td>4. General biology with laboratory 8 hrs.</td>
</tr>
<tr>
<td>(Biology electives recommended: genetics, embryology, cell biology.)</td>
</tr>
<tr>
<td>5. General physics with laboratory 8 hrs.</td>
</tr>
<tr>
<td>6. Mathematics: one semester of calculus is required; courses such as statistics, linear algebra, or differential equations may be used to complete the requirement 6 hrs.</td>
</tr>
</tbody>
</table>

A student is advised to choose his program according to his individual interest and ability so that he may fulfill his maximum academic potential.
The UAH School of Primary Medical Care, in conjunction with other UAH academic units, offers for selected UAH undergraduates several courses that are designed to assist pre-health professional students to increase their awareness of the health professions, problems, and issues. These courses are described in this catalog’s School of Primary Medical Care section, which also includes descriptions of the school’s medical student and resident programs.

Typical of the requirements for admission to dental schools are these which follow for the School of Dentistry of the University of Alabama in Birmingham:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Biological sciences</td>
</tr>
<tr>
<td>2. Inorganic chemistry (including qualitative analysis)</td>
</tr>
<tr>
<td>3. Organic chemistry</td>
</tr>
<tr>
<td>4. Quantitative analysis</td>
</tr>
<tr>
<td>5. Physics (including laboratory)</td>
</tr>
<tr>
<td>6. Analytic geometry and calculus</td>
</tr>
<tr>
<td>7. 30 semester hours of non-science courses to include 6 semester hours in English, history, political science, economics, philosophy, psychology, and sociology. Courses to enhance manual dexterity (sculpture, painting, etc.) are encouraged.</td>
</tr>
<tr>
<td>8. The completion of a minimum of 90 semester hours of collegiate work.</td>
</tr>
</tbody>
</table>

Students interested in preprofessional health programs (predentistry, premedicine, preoptometry, preveterinary medicine) are encouraged to contact the preprofessional adviser by calling the Office of the Dean, College of Science, telephone 895-6605.
The College of Administrative Science is a professional school with the mission to disseminate and develop knowledge which contributes to the education of competent, creative, and socially responsible managers for careers in private and public sectors with specific emphasis on the management of technology. This mission is influenced by today’s rapidly changing environment, which is increasingly oriented toward the application of advanced technology in organizations. This mission is also influenced by the location of the College in the third largest economic and cultural center in the State of Alabama, in a leading advanced technology center and a major space center in the nation. The faculty is committed to programs and activities that will help increase the contribution that this urban center makes to the economic and professional development of the state and nation.

In fulfilling its mission the College seeks to accomplish three major objectives in instruction, research and service. These objectives are:

1. To provide quality programs of undergraduate and graduate instruction in educating persons for the practice of administration at all levels of responsibility in diverse organizations.
2. To produce research which furthers the accumulated knowledge and/or contributes to the practice of the respective disciplines represented in the College.
3. To render public service to business, industry and government in the region and to conduct productive applied research which serves the technology industry and public sector organizations in the region. In addition, faculty involvement in professional societies is emphasized.
The programs to achieve these objectives recognize the needs of specific constituencies, including minority groups; women; part-time, working and adult students. There is also a special obligation to provide applied research and public service to broad groups through bureaus, centers, and institutes. The College is committed to serve society beyond the campus through professional development programs and to apply knowledge and expertise to the solution of problems of people, urban areas, rural areas, public bodies, and state and federal agencies whenever there are needs in which the College can be helpful.

Accreditation and Membership

In addition to the University’s accreditation by the Southern Association of Colleges and Schools, the College of Administrative Science is a member of the American Assembly of Collegiate Schools of Business (AACSB) which is a not-for-profit corporation of educational institutions, corporations, and other organizations devoted to the promotion and improvement of higher education in business administration and management.

The College is an associate member of the Association for University Business and Economic Research (AUBER) which is the professional association of business and economic research organizations in universities in America and six other countries.

Center for the Management of Science and Technology (CMOST)

The Center for the Management of Science and Technology (CMOST) is devoted to improving the state-of-the-art in the management of science and technology. CMOST funds and conducts research to develop new management techniques, is a “window on the world” source of the latest practices and a world-wide center for scientists, researchers and managers interested in the management of science and technology. CMOST focuses on the management of R&D, engineering, innovation, manufacturing, high-technology marketing and new product development. CMOST is staffed by personnel with degrees and backgrounds in science and engineering, who also have advanced degrees in management. Most of the staff have several years of real world experience in managing science and technologies.

Center for Management and Economic Research (CMER)

The Center’s broadest goal is to stimulate expansion of the economy of north Alabama by helping local managers define and realize growth opportunities and solve specific problems. The Center’s mission is to serve the business community, federal, state and local governments, individuals and the University through management and technical assistance, dissemination of economic and socio-economic information, and support for faculty in seeking funding for research projects. Special emphasis is placed on businesses in technological fields. In addition, the center staff does contract research on business and economic problems for governmental organizations and private industry. The center publishes the results of its research as monographs so that significant developments in business and economics can achieve wide exposure. The center is an associate member of the Association for University Business and Economic Research (AUBER), and a member of the NASA Technology Transfer Network.

Executive Education Program

The executive education program is designed to assist the members of the business, industry and governmental communities in keeping abreast of changes in a complex environment. The College of Administrative Science in cooperation with the Division of Continuing Education’s Office of Management Studies offers an interactive blend of management educational programming ranging from one-session seminars on specific problems to a substantial sequence of classes custom tailored for corporate and governmental audiences. For more information, call the Office of the Dean (205-895-6735).
Degrees Offered

Bachelor's. The College of Administrative Science offers the Bachelor of Science in Business Administration (BSBA). The BSBA encompasses majors in accounting, economics, finance, management, management information systems, and marketing.

The following BSBA majors are offered during the day: accounting, economics, finance, management-human resources management track, marketing, management information systems. The following BSBA majors are offered after 5:00 p.m.: accounting, management-general business track, management-human resources management track, management-procurement track, marketing, management information systems.

Students may obtain a second bachelor's degree in the College of Administrative Science if they:

1. Complete, in addition to credits earned while pursuing the first degree, in residence a minimum of 25 percent of the total degree requirements for the second degree;
2. Include a new major in the second degree;
3. Satisfy the College's general and major degree requirements in effect at the time they embark on the program leading to the second degree.

Master's. The Master of Science in Management (MSM) degree is a unique specialized management program, especially designed for the management of technology including the special needs of the Huntsville community. It was recognized by the National Research Council in 1991 as one of nineteen programs in the nation with a major thrust in the management of technology. It provides entry-level and mid-career managers with the practical and theoretical knowledge necessary to manage public and private organizations.

The MSM program is an interdisciplinary curriculum which develops skills in applying advanced technology and behavioral concepts crucial to management. This curriculum supplies students with critical knowledge about a wide range of organizations through coursework in accounting, economics, finance, management, quantitative methods, marketing, management information systems, the worldwide dimension of management of organizations and the legal-social-political-ethical environment of organizations.

Highly qualified science and engineering students seek the degree to broaden their educational background and prepare themselves for careers in management. Highly qualified students enrolled in the BSBA undergraduate program of the College of Administrative Science may be able to complete the requirements for a master's degree by completing one additional year of course work beyond the bachelor's level. Individuals who are interested in obtaining an MSM degree should contact the College's Assistant Dean in Room 102, Administrative Science Building, (205)895-6024. For more information on the MSM program, refer to the Graduate Catalog.

Business Administration Minors

Students from colleges other than Administrative Science may minor in business administration. The minor consists of at least 21 hours. A baccalaureate program with more than 30 hours (or 25 percent of degree requirements) in subjects commonly available in the College of Administrative Science will be reviewed by the Coordinator of Advisement to determine if it meets the BSBA degree requirements.

Students who choose business administration as a minor should take ECN 142 and ECN 143 or ECN 239 to meet their social science degree requirements since these hours are counted within the 30 hour or 25 percent rule. Additional minor courses consist ofACC 211 (Lab ACC 221), ACC 212 (Lab ACC 222), FIN 301, MGT 301, MKT 301, and 6 hours at the 300- or 400-level. The minor program must have the approval of the Coordinator of Advisement.
Pre-MBA. Students who choose business administration as a pre-MBA minor should select the following courses for the 9 to 12 hours of College of Administrative Science electives:

- BLS 211, MIS 301, MGT 450, MKT 415 or MSC 470 and MSC 325.

International Trade. The B.A. in Foreign Languages and International Trade (FLIT) is a composite major offered by the College of Liberal Arts' Department of Foreign Languages in cooperation with the College of Administrative Science. It is designed for students interested in specializing in a foreign area of the world or in international business, economics or affairs. The major prepares students for careers in international organizations within the U.S. government and in business firms. The administrative science cognate of the FLIT program consists of 30 hours: economics, accounting, environment of business, finance, management, marketing and one specialized international business course. The foreign language component consists of 36 hours in one foreign language: French, German, Russian, or Spanish, including elementary, intermediate, conversation, advanced composition, business and professions, culture, literature, electives and a practicum. A broad variety of career opportunities exist in the multinational and multilingual business world. For additional information see the Foreign Languages Department's section in the catalog.

Pre-Law. The work of successful lawyers has come to be more and more associated with the rendering of opinions and counsel on business matters such as banking, insurance, real estate titles, business contracts, etc. Corporations employ many lawyers full time for their contract and other legal work, and the young lawyer who has a degree in business will be at a distinct advantage in obtaining and doing such work.

Each law school determines its own requirements, such as admission criteria, number and type of semester hours required for entrance, etc. Students planning to enter a law school should be in communication with that school shortly after coming to college to insure the program they take will meet all requirements of the law school the student plans to attend. For more detailed information the student should read the Pre-Law Program section of this catalog.

Students who choose business administration as a pre-law minor should select the following courses for the 9 to 12 hours of College of Administrative Science electives:

- MIS 101, 102, BLS 211, MGT 301, and BLS 411.

Economics Minor

A student wishing to minor in economics may choose 21 semester hours of appropriate courses in economics and finance. The minor program must have the prior approval of the Chair of the Department of Economics and Finance.

Economics as a Second Area of Study

Students majoring in elementary education may choose economics as their second area of study. The area of study requires 18 hours of economics and finance courses and the prior approval of the Chair of the Department of Economics and Finance.

Policies, Procedures and Assistance

Course Numbers

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>ACC</td>
</tr>
<tr>
<td>Business Legal Studies</td>
<td>BLS</td>
</tr>
<tr>
<td>Economics</td>
<td>ECN</td>
</tr>
<tr>
<td>Finance</td>
<td>FIN</td>
</tr>
<tr>
<td>Management</td>
<td>MGT</td>
</tr>
<tr>
<td>Management Information Systems</td>
<td>MIS</td>
</tr>
<tr>
<td>Management Science</td>
<td>MSC</td>
</tr>
<tr>
<td>Marketing</td>
<td>MKT</td>
</tr>
</tbody>
</table>

74
Admission as a Freshman

Entering UAH freshmen interested in business administration must meet the general entrance requirements of the University. Students who intend to pursue the BSBA degree should read carefully the Admissions Information section of the catalog.

Students who have had inadequate high school preparation or who are placed in certain lower-level classes because of the results of placement tests may have to take one or more of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 003</td>
<td>Basic English</td>
<td>no credit</td>
</tr>
<tr>
<td>MA 004</td>
<td>Basic Algebra</td>
<td>no credit</td>
</tr>
<tr>
<td>MA 033</td>
<td>High School Geometry</td>
<td>no credit</td>
</tr>
<tr>
<td>MA 105</td>
<td>College Algebra</td>
<td>3 hours</td>
</tr>
<tr>
<td>MA 143</td>
<td>Finite Mathematics</td>
<td>3 hours</td>
</tr>
<tr>
<td>MIS 101</td>
<td>Microcomputing I</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIS 102</td>
<td>Microcomputing II</td>
<td>1 hour</td>
</tr>
</tbody>
</table>

These courses carry the academic credit indicated and will appear on transcripts of students who successfully complete the courses. Since the courses are prerequisite to courses required for the BSBA, credit earned in one or more of the courses may be applied toward the minimum elective requirements for the BSBA.

Management Information Systems Placement Policy

Prior to enrolling in sophomore or upper division administrative science courses, students are presumed to have acquired basic computer skills. These skills include the use of operating system software, spreadsheet software, and word processing software. Students lacking these skills will be advised to enroll in MIS 101 and/or MIS 102 before taking any business courses.

Pre-Business Classification

All undergraduate students entering the College of Administrative Science are admitted with a pre-business classification (code 07). Regular students remain in this classification until they are admitted to the upper division of the College of Administrative Science (code 17). Any request for deviation from these requirements must be petitioned through the College’s Office of Academic Assistance.

Students admitted into the pre-business classification may not attempt any business course number above 299.

To have the pre-business classification changed, students should apply through the College’s Office of Academic Assistance for admission to the upper division of the College. The Registrar’s Office cannot make this change.

Special Students

Individuals admitted to the University as conditional/probational must have their status changed to regular through the UAH Admissions Office and complete all Upper Division admission requirements before applying for admission to the upper division of the College and choosing a major. Special students may not attempt upper level business courses.

Admission as a Transfer Student

Students planning to transfer into the College of Administrative Science from a two- or four-year institution to obtain the BSBA are advised to follow the transfer program outlined below:
The specific credit for work done at other institutions which will apply toward the BSBA or BA degree is determined by the College's Coordinator of Advisement. Allowance of transfer credit by the Office of Admissions and Records does not necessarily mean that such credit will be applied toward a BSBA or BA degree. All inquiries concerning the applicability of credit should be made to the College's Coordinator of Advisement (205-895-6024).

Credit for business administration courses taken in schools with American Assembly of Collegiate Schools of Business (AACSB) accredited programs is transferable to UAH. Credit in courses taken in programs without AACSB accreditation may be accepted with validation or approval of the Dean.

Course work taken at a junior college after a student has earned more than 64 semester hours of credit may not be accepted for transfer. Courses taken at the lower division at another institution which are upper division courses at UAH will be accepted for transfer only after successful validation.

See the College's Coordinator of Advisement for the policy about specific transfer courses. These policies have been in effect since December 14, 1982.

Admission to the Upper Division

Admission to the upper division of the College of Administrative Science is available to students who have:

1. Completed 63 semester hours comprising the Lower Division Requirement.
2. A minimum grade of "C" in both English Composition courses (EH 101-102).
3. Earned a minimum average of "C" (2.0) for the 21 hours comprising the Lower Division Business Administration Core.

Note: For degree-seeking students in the College of Administrative Science admission to the upper division is a prerequisite for all upper division courses (numbered 300-499) in the College. Degree-seeking students in the College registering in upper-level business courses without completing the prerequisites, and being admitted to the upper division will be administratively withdrawn from those classes.
Admission and Academic Standard for Accounting Majors

For a student admitted as a candidate for a Bachelor of Science in Business Administration degree (BSBA) with a major in accounting or a certificate in accounting, admission to accounting courses numbered above ACC 301 is predicated upon admission to the upper division of the College of Administrative Science and an acceptable score on the Accounting Program Admission TEST (APAT). The student should contact the College’s Coordinator of Advisement, Room 102, Administrative Science Building to register for the APAT the term in which the student completes ACC 212. A student admitted to the upper division accounting program is required to make a grade of at least a “C” on each accounting course to be applied toward the BSBA degree or the Certificate in Accounting.

Probation and Dismissal

Students are placed on probation at the end of any semester in which they do not have a cumulative grade point average of 2.0. For more detail on the process, see the Academic Probation and Suspension section of the catalog.

When dismissed, the student must petition the College of Administrative Science for readmission. Application should be made in the Student Records Office, University Center.

Residence Requirement

At least 12 of the last 18 semester hours of a student’s program and a minimum of 32 semester hours of the total degree program must be completed at UAH. For BSBA students, the hours taken in residency must include at least 50 percent of the BSBA program (core curriculum and major option) including a minimum of 12 hours in the major option and 3 hours in MGT 499, Business Policy. Students who are required to take additional courses within the College of Administrative Science in order to meet the residence requirement may be required to complete more than 128 semester hours in order to graduate.

Student Advisement and Enrollment

Faculty advising of students is an integral part of the student’s academic progress and career development. Advising for BSBA degree candidates is handled at various stages of a student’s college career through the University’s Academic Advisement and Information Center (AAIC), the College’s Office of Academic Assistance, and faculty members in the student’s intended major.

First year students are required to plan their course selection with an advisor in the AAIC. After completing the first year of studies (30 semester hours) students seeking a BSBA are advised by the College of Administrative Science’s Coordinator of Advisement in the College’s Office of Academic Assistance (Administrative Science Building, Room 102; telephone 895-6024.) Transfer students are advised by the College’s Coordinator of Advisement. The College’s Office of Academic Assistance is a student’s contact point for information concerning possible majors, declaring a major, transfer credit and degree requirements.

With certain exceptions, all College of Administrative Science undergraduate and graduate students must have their registration cards signed by the appropriate advisement personnel. Excepted from the signature requirement are undergraduate juniors and seniors who have met all of the following requirements:

1. A formal declaration of major, signed by the Coordinator of Advisement, the student and the faculty advisor, on file in the UAH Records Office.
2. The student must have satisfactorily completed all of the following courses:
   - English Composition EH 101-102
   - Basic Speech Communication CM 113
   - Mathematics MA 151 or MA 153
Types of Advising Assistance Available.

Transcript Evaluation. Two aspects of transcript evaluation affect students: (1) Evaluation of course work to be transferred to UAH for degree credit and (2) the continuing evaluation of completion of graduation requirements. The evaluation of transfer work is initially accomplished by the University’s Office of Admissions. Evaluation of business and economics course work is conducted by the College’s Coordinator of Advisement, Room 102, Administrative Science Building, working with various departments within the college.

The College’s Office of Academic Assistance also keeps a current record of each student’s progress at UAH.

Schedule Building. Schedule building is the determination of specific courses the student should take in a given term. Students should refer to the UAH Schedule of Courses and the Catalog in consultation with the faculty advisor or staff of the College’s Office of Academic Assistance to determine a specific course of study. Selection of specific sections and of times for courses is the student’s responsibility. The tentative schedule must be approved by an advisor.

Program Planning. Students are encouraged to outline an entire plan of study early in their academic career. This program planning activity is provided by the College’s Coordinator of Advisement and includes suggested model programs for each of the major fields of study offered by the College.

Counseling. Students seeking career guidance, personal counseling or other types of assistance will be directed to the appropriate University office by the staff of the College’s Office of Academic Assistance.
Where to Find Advising Assistance.

College's Office of Academic Assistance (102 Administrative Science Building). The College's Office of Academic Assistance is staffed to provide assistance and understanding of degree program requirements, planning an entire academic course of study, designing a course schedule for a particular term and for providing referrals to other University offices for assistance as appropriate.

College's Office of the Dean (202 Administrative Science Building). Students should come to the Office of the Dean for special advising assistance that cannot be resolved at locations described in this section and to file appeals and waiver requests relative to college and University regulations. The dean's office will also refer students to the appropriate office should the student be unsure as to where to find assistance.

The University's Academic Advisement and Information Center (AAIC, 118 University Center). The AAIC is available to assist first year students with their course selection.

University's Student Records Office (116 University Center). The student records office maintains a complete and up to date file for each student admitted to the University.

Cooperative Education.

The College of Administrative Science participates in the University's Cooperative Education Program. The program is designed to provide relevant paid employment experiences that integrate, complement and enhance the student's academic program. The students are placed in co-op positions in a variety of business settings, including government agencies, financial institutions, social agencies, accounting firms, entrepreneurial companies and many others. Co-op placements must be approved by the student's faculty sponsor. Participation in the co-op program requires completion of designated entry-level courses. The program is open to both undergraduate and graduate students in business. More information is available from the business coordinator in the Co-operative Education Office.

Internship Program Guidelines

The internship program is designed to provide professional work experience for students in a field relevant to their major.

The program consists of 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. The course grade will be given on a satisfactory (S)/unsatisfactory (U) basis.

The prerequisite is senior standing and approval of the department chair.

In addition to making a value judgement on the merit, quality, and relevance of the proposed internship program, the chair will require the following academic prerequisites prior to approval:

1. completion of all core courses (Business Policy may be excepted) and EH 300
2. sufficient coursework in the major relevant to the project
3. a minimum GPA of 3.0 in all courses attempted in the College
4. completion of at least 18 hours at UAH
5. academic load for the term of the internship must not exceed 9 hours (this includes the 3 hrs. for the internship)

An internship may be elected only once, i.e. a maximum of 3 hours toward the BSBA degree. The internship may count as an elective within the major.

The current cooperative education activity does not qualify for an internship. However, in exceptional cases, a student may be allowed to do an internship at the "Co-op" organization during the study term. The student must meet all the requirements for internship.

The procedure to be followed in obtaining an internship is as follows:

1. The student will apply for an internship in the Office of Academic Assistance. The Coordinator of Advisement will conduct a preliminary check to ensure that the student
meets the criteria for the internship. If the student is qualified, the Coordinator of Advisement schedules an appointment for the student with the chair of the respective department.

(2) When a potential internship opportunity is identified between an organization and a qualified student, the organization is asked to provide the department chair a task description requiring 100-120 hours of effort over a 10-week period. At the same time, the student writes a brief (2-3 pages) proposal to the chair describing the potential task, the goals, plans to accomplish the task, and how the task would be beneficial to the student’s education. These two documents must reach the departmental office at least one week prior to regular registration.

(3) The chair reviews the documents mentioned above and informs the student if the program is approved. The chair’s written approval is required prior to registration.

(4) When the chair’s approval is received, the student registers for the course and begins work on the project under the supervisor identified in the organization’s task description.

(5) On or about the end of the 5th week, the student is required to submit a progress report to the chair showing accomplishments to date, how objectives are being met, any unforeseen problems, etc.

(6) Prior to the final examination week, the project supervisor sends a letter to the chair evaluating the student’s work regarding quality, attendance, ability to adapt to changes, ability to work with others, and any other evaluative features of the work. At the same time, the student also submits a final report to the chair explaining the experience and accomplishments as compared to the student’s initial goals, etc.

(7) The chair will issue a grade of satisfactory (S) or unsatisfactory (U) based on all of the above.

(8) The chair will see that all paperwork is submitted to the Office of Academic Assistance for inclusion in the student’s file.

Catalog Requirements and Changes

The College of Administrative Science reserves the right to modify curricula and specific courses of instruction including course prerequisites, to alter requirements for graduation and to change the majors to be awarded at any time the College may determine. Such changes may be applicable to either prospective or currently enrolled students.

All official notices affecting the College of Administrative Science undergraduate students are posted in the College’s Office of Academic Assistance (102 Administrative Science Building). The notices officially update the University catalogs and are binding on students pursuing programs offered by the College as if published in the catalogs.

All College of Administrative Science students enter the College under all University and College policies then in effect. Each student is responsible for meeting all catalog requirements for graduation, including taking courses in the proper sequence as shown in the catalog.

Due to rapid advancement in knowledge, it may occasionally be necessary to revise the curriculum for the BSBA degree. However, any student may graduate under the catalog in effect at the time he entered the University, provided that all degree requirements are satisfied within seven years from the day of admission.

Each time a student changes a major or option, a re-evaluation of all work already taken is done in terms of that particular program’s requirements. Due to rapid advancement in knowledge, a student is permitted seven years from the original date of entry to complete a four year curriculum, after which time a re-evaluation of all work previously taken may be required.

Any deviations from curricular and other College requirements must be approved in writing in advance of the deviation (for example, substitution of courses). Such changes must normally be recommended by the student’s assigned advisor and approved by the Assistant Dean.
Bachelor of Science in Business Administration
Degree Requirements

The Bachelor of Science in Business Administration degree program is a comprehensive four year program which includes a liberal arts and science foundation, a pre-business administration core curriculum, a junior-senior business administration core curriculum, a major, and a choice of elective courses.

The undergraduate curriculum is divided into the lower and upper division. To prepare students for the challenges of the future, the College's program provides a solid foundation in the diverse academic disciplines which relate to the needs of business, industry, and government. At the undergraduate level students concentrate the first two years of study on general course work in the humanities and fine arts, the behavioral and social sciences, the natural sciences, and mathematics. Successful completion of these courses broadens intellectual awareness and enhances the development of cultural literacy and analytical thinking. This general education component along with the pre-business administration core curriculum prepares the student for admission to upper division course work in the College of Administrative Science.

The remaining two years of course work develops the student's understanding of the diverse functions of business in the American and world-wide economy. This is accomplished by studying the essential concepts of business administration as well as focusing on one of the major disciplines. The student may declare a major in accounting, economics, finance, management, management information systems or marketing. Students enrolling in the College's programs who have already chosen the major they wish to pursue may designate that major when they register. Students who are undecided about what major they wish to pursue should mark management on the registration form.

Each student must meet the following degree requirements established by the University and the faculty of the College of Administrative Science to be awarded a BSBA:

1. Complete the lower division general education requirement;
2. Complete the lower division business administration core curriculum;
3. Complete the upper division general education requirement;
4. Complete the upper division business administration core curriculum;
5. Complete the courses required for the major;
6. Complete a minimum of 128 semester hours of work with a minimum of 39 semester hours in courses numbered 300 and above;
7. Attain a minimum grade point average of 2.0 (C) in all course work attempted;
8. Attain a minimum grade point average of 2.0 (C) in the Business Administration Core Curriculum (48 hours).
9. Attain a minimum grade point average of 2.0 (C) in the major. Note: ACC majors must attain a C in each course in the ACC major.
10. Complete the business policy course (MGT 499) with a minimum grade of “C”; and
11. Comply with University and College of Administrative Science residence requirements.

Three levels of requirements must be completed in order to receive the Bachelor of Science in Business Administration degree: (1) University general education and graduation requirements, (2) College of Administrative Science core requirements, and (3) College major requirements. Students should complete these three levels of requirements in the order listed, with some overlap and duplication of courses among the three levels. The recommended sequence of courses is presented in the following sections.
Lower Division Requirements: 63 Semester Hours

Work in the first two years of study is planned in such a way as to give the student basic information in the general areas of the humanities and fine arts, communication, the social and behavioral sciences, the natural and physical sciences, and mathematics. This liberal arts and science foundation is referred to as the General Education Requirements (GER). In addition to the GER, students must complete 21 semester hours of work in the pre-business administration lower division core curriculum. Lower division requirements are as follows:

I. Lower Division General Education Requirements

1. Communications
   a. English Composition I & II (EH 101-102) 6
   b. Basic Speech Communication (CM 113) 3
   c. Bibliography of Business and Economics (BIB 230) 1

2. Mathematics*
   Survey of Elementary Calculus (MA 151**) 3

3. Social Sciences
   Two of the following six courses:
   American Government (PSC 101), Introduction to Comparative Government (PSC 135), Introduction to Sociology (SOC 100), Introduction to Anthropology (Soc 200), General Psychology (PY 101,102) 6

4. Humanities
   a. Origins and Development of the Contemporary World I & II (HY 101, 102) 6
   b. Survey of Literature (EH 205, 206, 230, 240, or 241) 3
   c. Fine Arts
      Art History Survey: Ancient to Renaissance (ARH 100), Art History Survey: Renaissance to Modern (ARH 101), Fundamentals or Music (MU 100), or Introduction to Music Listening (MU 110).
   d. Philosophy Requirement
      One of the following courses:
      Introduction to Philosophy (PHL 101), Introduction to Logic (PHL 201), or Introduction to Ethics (PHL 202).

5. Natural and Physical Sciences
   Laboratory Science g***
   (biology, chemistry, physics or environmental science)

TOTAL 42

*Each BSBA student will be given a mathematics placement level when the student enters UAH. The placement levels and their appropriate courses are:
Remedial MA 004 (Algebra) or MA 033 (Geometry)
Level I MA 119 or MA 105
Level II MA 121 or MA 143
Level III MA 153 or MA 151

**The mathematics department recommends that students planning a curriculum not requiring training past a minimum proficiency level should choose the following track:
MA 105 – College Algebra
MA 143 – Finite Mathematics
MA 151 – Survey of Elementary Calculus
Students planning to (a) emphasize quantitative methods, or (b) minor in an area requiring at least two quarters of calculus, or (c) attend graduate school should choose the following track:

MA 119 – Precalculus I
MA 121 – Precalculus II
MA 153 – Calculus I
MA 154 – Calculus II

***Students who have completed 10 quarter hours (or 6.6 semester hours) of laboratory science will be considered to have met this requirement. Students who have completed fewer hours of laboratory science may petition the Dean of the College of Science for an assessment of equivalency.

II. Lower Division Business Administration Core Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Macroeconomics (ECN 142)</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Microeconomics (ECN 143)</td>
<td>3</td>
</tr>
<tr>
<td>Introduction to Computers and Information Systems (MIS 201)*</td>
<td>3</td>
</tr>
<tr>
<td>Statistical Analysis (MSC 287)*</td>
<td>3</td>
</tr>
<tr>
<td>Social, Legal and Ethical Environment of Business (BLS 211)</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Accounting I (ACC 211 with Lab ACC 221)*</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Accounting II (ACC 212 with Lab ACC 222)*</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Lower Division Requirements: 63

*Each student is presumed to have acquired basic computer skills before enrolling in sophomore or upper division business courses. These skills include the use of operating system software, spreadsheet software, and word processing software. Students lacking these skills will be advised to enroll in MIS 101 and 102.

Upper Division Requirements: 65 Semester Hours

Work in the last two years of study is planned in such a way as to build on the foundation provided by the lower division general education requirements and the lower division business administration core. The final two years completes the student’s common body of knowledge in business administration and provides the student with advanced work in a subject area (major).

Please read the College’s section, “Admission to the Upper-Division”, to determine the requirements to enroll in upper division courses (numbered 300 through 499).

III. Upper Division General Education Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies of Business Writing (EH 300)</td>
<td>3</td>
</tr>
<tr>
<td>(Is a corequisite or prerequisite for all ADSC courses with a number greater than 301 and prerequisite for 400 level courses.)</td>
<td></td>
</tr>
<tr>
<td>Electives outside the College of Administrative Science</td>
<td>7</td>
</tr>
<tr>
<td>(These electives may be taken in the lower division)</td>
<td></td>
</tr>
</tbody>
</table>

Total: 10

Upper Division Business Administration Core Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managerial Accounting (ACC 301)*</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Financial Management (FIN 301)</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Management (MGT 301)</td>
<td>3</td>
</tr>
<tr>
<td>Information Systems in Organizations (MIS 301)</td>
<td>3</td>
</tr>
<tr>
<td>Principles of Marketing (MKT 301)</td>
<td>3</td>
</tr>
<tr>
<td>Quantitative Methods in Business (MSC 325)</td>
<td>3</td>
</tr>
<tr>
<td>Production/Operations Management (MSC 385)</td>
<td>3</td>
</tr>
</tbody>
</table>
International Business Requirement ............................................... 3
(ACC 450, FIN 454, MKT 415, MGT 450 or MSC 470)
Business Policy (MGT 499) .................................................. 3
*Accounting majors take ACC 314

IV. Major (each major is described below) .................................. 21

V. Free electives (May be selected from any school within the University) 7
Total Upper Division .................................................. 65
Total Lower Division ................................................. 63
Total minimum hours for a BSBA Degree ................................. 128**

**No more than six hours of HPE activity and music ensemble courses may count toward graduation.

Majors in the BSBA Degree
The following BSBA majors are offered during the day: accounting, economics-finance, management-human resources management track, marketing, management information systems.
The following BSBA major are offered after 5:00 p.m.: accounting, management-general business track, management-human resources management track, management-procurement management track, marketing, management information systems.

Department of Accounting and Business Legal Studies
Professors Porter and Titard (Chair); Associate Professor Bryson; Assistant Professors Batchelder, Burks, Spearing, Wall, Woodward; Lecturers Justinger, Swann, Whitten.

Admission and Academic Standard for Accounting Majors
For a student admitted as a candidate for a Bachelor of Science in Business Administration degree (BSBA) with a major in accounting or a certificate in accounting, admission to accounting courses numbered above ACC 301 is predicated upon admission to the upper division of the College of Administrative Science and an acceptable score on the Accounting Program Admission TEST (APAT). The student should contact the Coordinator of Advisement, Room 102 ASB, to register for the APAT the term in which the student completes ACC 212. A student admitted to the upper division accounting program is required to make a grade of at least a "C" on each accounting course to be applied toward the BSBA degree of the Certificate in Accounting.

The accounting major is offered during the day and during the evening.

Requirements for a major in accounting within the BSBA degree are as follows:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 310</td>
<td>Intermediate Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 311</td>
<td>Intermediate Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 312</td>
<td>Intermediate Accounting III</td>
<td>3</td>
</tr>
<tr>
<td>ACC 313</td>
<td>Income Tax Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 407</td>
<td>Accounting Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>ACC 431</td>
<td>Principles of Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACC 470</td>
<td>Seminar in Contemporary Accounting Issues</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>21</td>
</tr>
</tbody>
</table>
Careers in accounting are frequently identified as being in public accounting, management accounting, governmental accounting, and internal auditing. The undergraduate accounting curriculum provides students with the basic educational background necessary to pursue careers in their fields. Accounting majors are encouraged to consult with the faculty about the opportunities available and the preparation needed in the several career areas.

Career opportunities also exist in the field of accounting and federal government contracting. Students interested in this area should take as electives: ACC 317-Governmental (Fund) Accounting; MGT 300-Introduction to Procurement; MGT 302-Contract Administration; MGT 303-Cost and Price Analysis.

Students considering the professional certification examinations upon graduation, such as the Certified Public Accountant (CPA), the Certified Management Accountant (CMA), or the Certified Internal Auditor (CIA), will need course work in accounting beyond the minimum requirements for the BSBA degree. Effective January 1, 1995, in keeping with a growing trend in the United States, the Alabama State Board of Public Accountancy will require 150 semester hours of credit in order to sit for the CPA examination. For additional information regarding the 150-hour requirement or regarding the other professional examinations, students should contact the Chair of the Department of Accounting and Business Legal Studies (895-6159).

Department of Economics and Finance

Professors Billings, Paul (Chair); Associate Professors Evans, Schnell, Schoening, Wilhite; Instructor Burnett.

Economics Track

The BSBA degree in economics provides the student with a broad range of analytical skills enabling them to function in a wide variety of organizational settings. The economics track prepares students for careers in both private business and government agencies where data analysis, forecasting and analytical problem solving are performed. The program also prepares the student to pursue advanced degrees in business, economics and law. Students choosing to major in economics should see the Chair of the Department of Economics and Finance.

To be successful, an economics major should possess superior analytical skills and be proficient in logic, algebra, elementary calculus, and statistics. The economics major is offered only during the day.

Requirements for a major in economics within the BSBA degree are as follows:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECN 340</td>
<td>Intermediate Macroeconomics</td>
</tr>
<tr>
<td>ECN 345</td>
<td>Intermediate Microeconomics</td>
</tr>
<tr>
<td>FIN 352</td>
<td>Money and Banking</td>
</tr>
<tr>
<td>FIN 361</td>
<td>Investments</td>
</tr>
<tr>
<td>FIN 378</td>
<td>Long-Term Capital Management</td>
</tr>
<tr>
<td>FIN 431</td>
<td>Short-Term Capital Management</td>
</tr>
<tr>
<td>ECN 470</td>
<td>Seminar in Economics</td>
</tr>
</tbody>
</table>

Finance Track

The BSBA degree in finance acquaints the student with the modern analytic principles of the discipline. This prepares the student to function in a wide variety of institutional settings. The finance major prepares students for careers in security analysis, portfolio management, banking, and corporate finance.

To be successful, a finance major should be proficient in economic analysis, algebra, elementary calculus, and statistics. The finance major is offered only during the day.
Requirements for the finance track within the BSBA degree are as follows:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECN 345</td>
<td>Intermediate Microeconomics</td>
</tr>
<tr>
<td>FIN 352</td>
<td>Money and Banking</td>
</tr>
<tr>
<td>FIN 361</td>
<td>Investments</td>
</tr>
<tr>
<td>FIN 378</td>
<td>Long-Term Capital Management</td>
</tr>
<tr>
<td>FIN 431</td>
<td>Short-Term Capital Management</td>
</tr>
<tr>
<td>FIN 395</td>
<td>Portfolio Management</td>
</tr>
<tr>
<td>FIN 470</td>
<td>Seminar in Finance</td>
</tr>
</tbody>
</table>

Department of Management and Marketing

Professors McCollum, Sherman (Chair); Associate Professors Gramm, Jackson, Olsen; Assistant Professors Adams, Burger, Iyer, Simpson, Spann.

Management

A major in management enables the student to develop a better understanding of the social, political, and industrial society in which we live. Such an understanding complements the skills developed in the program which are necessary for the effective and efficient operation of a wide range of governmental, business, and industrial organizations.

This major generally describes the planning, organizing and controlling of a business, including organizational and human aspects, with emphasis on various theories of management, the knowledge and understanding necessary for managing people and functions, and decision making.

The management major is structured to provide the broad education students will need for flexibility and mobility as future managers in various possible types of organizations. This permits students to elect one of several available tracks to assist them in more adequately fulfilling requirements of their planned initial employment and to prepare students for advanced studies in their chosen fields.

There are three tracks in the management curriculum. The general business track is offered for students whose career goals require a broad knowledge of the functional areas of management rather than the specialization of a major field. This major option would be used primarily by students planning to enter a small business where a specialization (such as accounting or marketing) is not as appropriate an educational background as is extensive upper division coursework in three or four functional areas. Entry positions include department manager, merchandise manager, and director of public relations.

The management track focuses on personnel administration, organizational behavior, and labor relations. This major option would be used primarily by students planning to enter positions as a personnel staff specialist, training director, wage and salary specialist, employment manager, benefits analyst, and industrial relations supervisor.

The third track is procurement management. This track describes the methods, techniques, and processes by which contracts are obtained, monitored, and completed. It has as its primary objective the preparation of qualified students for careers in procurement management in federal, state and local government agencies as well as the private sector. In order to achieve these objectives, the program stresses a broad foundation in the essential elements of business administration, and a specialization in procurement management.

The program is designed to provide the basic skills and knowledge requirements for procurement positions (GS 1102) for positions at the GS 5-9 level of the following procurement specializations:
The general business track is offered during the evening. The human resource management track is offered during the day and the evening. The procurement management track is offered only during the evening.

Requirements for a major in management within the BSBA degree are as follows:

**General Business Track:** Faculty Advisor: Dr. Sherman

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 378</td>
<td>Long-Term Capital Management</td>
</tr>
<tr>
<td>MGT 363</td>
<td>Personnel: Human Resource Management</td>
</tr>
<tr>
<td>MKT 332</td>
<td>Consumer Behavior</td>
</tr>
<tr>
<td>MKT 342</td>
<td>Promotional Strategy</td>
</tr>
<tr>
<td>MIS 400</td>
<td>Decision Support Systems</td>
</tr>
<tr>
<td>MGT 405</td>
<td>New Ventures Strategies</td>
</tr>
</tbody>
</table>

**Human Resource Management Track:** Faculty Advisor: Dr. Sherman

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 361</td>
<td>Organizational Behavior</td>
</tr>
<tr>
<td>MGT 362</td>
<td>Management &amp; Labor Relations</td>
</tr>
<tr>
<td>MGT 363</td>
<td>Personnel: Human Resource Management</td>
</tr>
<tr>
<td>MGT 462</td>
<td>Government Regulation of Human Resources Management</td>
</tr>
<tr>
<td>MGT 460</td>
<td>Employee Training and Development</td>
</tr>
<tr>
<td>MGT 461</td>
<td>Wage and Salary Administration</td>
</tr>
<tr>
<td>MGT 470</td>
<td>Special Topics in Technology Mgmt.</td>
</tr>
</tbody>
</table>

**Procurement Management Track:** Faculty Advisor: Dr. Riggs

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 300</td>
<td>Introduction to Procurement</td>
</tr>
<tr>
<td>MGT 302</td>
<td>Contract Administration</td>
</tr>
<tr>
<td>MGT 303</td>
<td>Cost and Price Analysis</td>
</tr>
<tr>
<td>MKT 470</td>
<td>Marketing in a High Technology Environment</td>
</tr>
<tr>
<td>MGT 404</td>
<td>Negotiation Techniques</td>
</tr>
<tr>
<td>MGT 406</td>
<td>Government Contract Law</td>
</tr>
<tr>
<td>MGT 361</td>
<td>Organizational Behavior</td>
</tr>
</tbody>
</table>

**Marketing**

The marketing program studies the principles, practices and concepts involved in business activities which transfer products and services from the producer to the consumer. It includes the study of consumers and their behavior in the market, the channels of distribution, promotional consideration, and other related topics. In particular, this program focuses on the marketing research activities such as analysis of data on product and sales, the conducting of surveys and interviews, test marketing of new products, and preparation of recommendations to clients or internal management. A degree in marketing prepares the student for careers with manufacturers, distributors, retailers, government, and other business operations.
The marketing major is offered during the day and the evening.

Requirements for a major in marketing within the BSBA degree are as follows:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKT 315</td>
<td>Sales Management &amp; Professional Selling</td>
</tr>
<tr>
<td>MKT 332</td>
<td>Consumer Behavior</td>
</tr>
<tr>
<td>MKT 343</td>
<td>Marketing Research Design</td>
</tr>
<tr>
<td>MKT 470</td>
<td>Marketing in a High Technology Environment</td>
</tr>
<tr>
<td>MKT 480</td>
<td>Marketing Management</td>
</tr>
<tr>
<td>MGT 405</td>
<td>New Ventures Strategies</td>
</tr>
</tbody>
</table>

ADSC elective approved by advisor*

*Students who take MKT 415 to satisfy the international business requirement cannot use this as a marketing elective course. Additional marketing courses can be taken as College electives.

Department of Management Information Systems and Management Science

Professors Souder (Eminent Scholar), Stafford, Zant (Chair); Associate Professors Trueblood, Tseng; Assistant Professors, Floyd, Riggs; Adjunct Assistant Professor Ballenger; Adjunct Instructors Judkins, Maddux; Lecturer Wilson.

Management Information Systems

The major in management information systems is designed for students who want to become designers of information systems that utilize computers in a business or administrative environment. Management information systems subject matter includes computer hardware, computer software, systems analysis and design methodologies, behavioral issues and the business or administrative context within which computer systems are applied. The management information systems curriculum differs from the computer science curriculum a number of ways:

a. The management information systems curriculum covers information system concepts and processes within the contexts of organization functions, management activity and technical information systems knowledge, whereas computer science tends to be taught within an environment of mathematics, algorithms, and engineering technology.

b. The management information systems graduate is expected to work within the environment of an organization and to interact with both organizational functions and computer technology. The computer science graduate has less interaction with organizational functions and more interaction with hardware and software technology.

c. In technical expertise, the management information systems curriculum places a substantial emphasis on analysis and design methodologies appropriate to the business and administrative environment. The computer science graduate typically has less exposure to management information requirements analysis and organizational considerations but obtains greater expertise in algorithm development, and computer hardware.

Requirements for a major in management information systems within the BSBA degree are as follows:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS 210</td>
<td>Introduction to Computer Programming in Business</td>
</tr>
<tr>
<td>MIS 310</td>
<td>Advanced Computer Programming in Business</td>
</tr>
<tr>
<td>MIS 340</td>
<td>Data Bases for Management</td>
</tr>
<tr>
<td>MIS 412</td>
<td>Information System Design</td>
</tr>
<tr>
<td>MIS 499</td>
<td>Systems Development Project</td>
</tr>
</tbody>
</table>
Possible Minors for the BSBA Degree

BSBA degree candidates may supplement their degree program by choosing a minor. Students electing a minor may use the 14 hours of electives and courses completed in the general education requirements as part of the required 21 hours. However, students who choose a minor may be required to complete more than 128 hours. Courses counted in a minor may not be applied to core or major course requirements for a BSBA degree. Check with the College’s Coordinator of Advisement (Room 102, Administrative Science Building).

Certificate In Accounting

Many individuals express a desire to pursue a career in accounting after having earned a bachelor’s degree in another discipline. In order to sit for the Uniform Certified Public Accountant (CPA) Examination in Alabama and many other states, the Certified Management Accountant (CMA) examination, or the Certified Internal Auditor (CIA) examination, a person must have a bachelor’s degree (not necessarily in accounting) and as many credit hours in accounting as the student would have if he had majored in accounting. In order to meet this need, UAH offers a certificate in accounting program.

Admission to the certificate in accounting program is limited to students having a bachelor’s degree in a discipline other than accounting. In addition, a student is required to complete the Pre-Business Administration Core Curriculum, specific course prerequisites, and attain an acceptable score on the Accounting Program Admission Test (APAT). The student should contact the Coordinator of Advisement in Administrative Science to register for the APAT the term in which the student completes ACC 212. After admission to the program the student may enroll in the following courses:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 310</td>
<td>Intermediate Accounting I</td>
</tr>
<tr>
<td>ACC 311</td>
<td>Intermediate Accounting II</td>
</tr>
<tr>
<td>ACC 312</td>
<td>Intermediate Accounting III</td>
</tr>
<tr>
<td>ACC 313</td>
<td>Income Tax Accounting I</td>
</tr>
<tr>
<td>ACC 314</td>
<td>Cost Accounting</td>
</tr>
<tr>
<td>ACC 407</td>
<td>Accounting Information Systems</td>
</tr>
<tr>
<td>ACC 431</td>
<td>Principles of Auditing</td>
</tr>
<tr>
<td>ACC 470</td>
<td>Seminar in Contemporary Accounting Issues</td>
</tr>
</tbody>
</table>

The student must counsel with the Coordinator of Advisement, secure the approval of the Chair of the Department of Accounting and Business Legal Studies, and be admitted to UAH as a regular student before enrolling in the certificate in accounting program. A student may transfer credit to apply toward the Pre-Business Administration Core Curriculum, prerequisite requirements, and a maximum of six (6) semester hours in accounting toward the program itself. A student admitted to the certificate program is required to make a grade of at least a “C” on each accounting course to be applied toward the certificate in accounting.
Courses of Instruction, Admission, and Descriptions

Lower Division. Courses numbered 100 to 199 are designed primarily for freshmen and courses numbered 200 to 299 are designed primarily for sophomores. Students from other classes may be admitted for lower division credit. Graduate students may take these courses and receive lower division credit, but not graduate credit.

Upper Division. Courses numbered 300 to 499 are available only to juniors, seniors and graduate students. All students, both those admitted as majors in the College of Administrative Science and those admitted as majors in other colleges in the University, must meet College of Administrative Science general prerequisite requirements in order to be admitted to upper division College of Administrative Science courses in addition to the specific course prerequisites cited in the course descriptions.

General prerequisites for all upper division College of Administrative Science courses are the completion of English 101 and 102, upper division standing (completion of at least 60 semester hours) and admission to UAH as a regular student. See NOTE at end of this section.

Graduate students may take these courses for upper division credit, but not for graduate credit.

Offerings. The following abbreviations indicate the terms of the calendar the course normally will be offered: Su—Summer Term, F—Fall Term, W—Winter Term, and Sp—Spring Term. Where courses are offered on alternate years only, the words “even” or “odd” will indicate which years the course will be offered. Course offerings by term are subject to change dependent upon availability of faculty resources and to accommodate the needs of students.

NOTE: Any faculty member teaching an upper-division course in the College of Administrative Science may assume that all students have completed the specific courses listed under “Lower Division Requirements” above; and for courses with a number greater than 301, will have completed EH 300.

Accounting (ACC)

Lower Division Courses

211 **Principles of Accounting I** 3 hrs.
Introduction to the accounting process, based upon the theory of double-entry bookkeeping. Particular emphasis upon the creation, content, and analysis of basic financial statements. Prerequisite: sophomore standing. Parallel: ACC 221. Su, F, W, Sp.

212 **Principles of Accounting II** 3 hrs.

213 **Individual Income Tax Return Preparation** 3 hrs.
Basic income tax law and procedures needed to prepare individual federal and state income tax returns. Prerequisite: Students enrolled at UAH not majoring in accounting.

221 **Accounting Lab I** 0 hrs.

222 **Accounting Lab II** 0 hrs.
### Upper Division Courses (see prerequisites for upper division)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Fundamentals of Accounting</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>One-term course for students in fields other than administrative science who aspire to managerial positions which require an understanding of accounting, providing such students with an introduction to accounting terminology, to construction of accounting reports, and to the pervasive use of accounting information in business. No credit toward a BSBA degree. Prerequisites: sophomore standing and MSC 287. Parallel: ACC 221. Lab Fee: Level 4.</td>
<td></td>
</tr>
<tr>
<td>301</td>
<td>Managerial Accounting</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>310</td>
<td>Intermediate Accounting I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>311</td>
<td>Intermediate Accounting II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Continued in-depth theoretical and practical treatment of selected accounting topics covering assets, liabilities, and stockholders' equity. Emphasis is placed upon the unique accounting characteristics of corporations. Prerequisite: ACC 310. Lab Fee: Level 3. W, Su.</td>
<td></td>
</tr>
<tr>
<td>312</td>
<td>Intermediate Accounting III</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>313</td>
<td>Income Tax Accounting I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Determination of taxable income, business and non-business deductions, and selected aspects of tax accounting for individuals and sole proprietorships. Prerequisite: ACC 212. Lab Fee: Level 3. Su, W.</td>
<td></td>
</tr>
<tr>
<td>314</td>
<td>Cost Accounting</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Review of basic cost accounting concepts. Detailed study of advanced topics relating to job order and process costing systems, standard costing, and cost-volume-profit analysis, with special attention given to behavioral implications and ethical considerations of cost accounting, as well as international business. Prerequisite: ACC 212. Lab Fee: level 3. F, Sp.</td>
<td></td>
</tr>
<tr>
<td>317</td>
<td>Government (Fund) Accounting</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Fund accounting at federal, state and local governments, hospitals and universities. Special accounting principles, budgeting, accounting for various funds and account groups, are emphasized. Prerequisite: ACC 301 or 310. W.</td>
<td></td>
</tr>
<tr>
<td>407</td>
<td>Accounting Information Systems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Design, operation, and analysis of accounting information systems with respect to data input, processing, storage, recall, security, internal control, and the audit trail. Emphasis is on computer oriented systems. Prerequisites: ACC 212, MIS 301. (Same as MIS 407) Lab Fee: Level 4. F, Sp.</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>432</td>
<td>Advanced Auditing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>490</td>
<td>Special Projects</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>495</td>
<td>Internship in Accounting</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

Business Legal Studies (BLS)

**Lower Division Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>211</td>
<td>Legal Environment of Business</td>
<td>3 hrs.</td>
<td>Legal environment of business including ethical, social, and political influences on both profit and non-profit organizations. Su, F, W, Sp.</td>
</tr>
</tbody>
</table>

**Upper Division Courses (see prerequisites for upper division)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>310</td>
<td>Labor Law</td>
<td>3 hrs.</td>
<td>Analysis of background, content, and significance of labor relations law. Prerequisites: BLS 211, MGT 301. Sp.</td>
</tr>
<tr>
<td>411</td>
<td>Business Law for Accountants</td>
<td>3 hrs.</td>
<td>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. Prerequisites: BLS 211 and senior standing. W.</td>
</tr>
</tbody>
</table>
Economics (ECN)

Lower Division Courses

142 Principles of Macroeconomics 3 hrs.
Economic analysis and its application in investigating the economic functional relation between business, consumers, and government. National income analysis, determination of employment and price levels, and introduction to market demand and supply analysis. Students who pass this course will not be eligible to take ECN 239 for additional credit. Prerequisite: MA 105. Su, F, W, Sp.

143 Principles of Microeconomics 3 hrs.
Continuation of ECN 142. Advanced value theory and its application to analysis of market performance under conditions ranging from competitive to monopolistic, including consideration of distribution along functional lines, and economic growth. Students who pass this course will not be eligible to take ECN 239 for additional credit. Su, F, W, Sp.

239 Principles of Economics for Engineering & Science Students 3 hrs.
Basic concepts of microeconomics and macroeconomics for students with advanced analytical capabilities. Major topics of study will include supply and demand, costs, industrial structure, resource pricing, national income accounting, determination of levels of GNP and other macroeconomic variables, and fiscal and monetary policy. Prerequisite: MA 153. Note: Students who complete this course cannot receive more than 3 hrs. degree credit from among this course, ECN 142 and ECN 143. Engineering, science, and honor students who pass ECN 239 and who later decide to major in business should complete 3 additional hours of ECN at 300 level or above. Any deviations from this requirement must be approved by the department chair. Su., F, W, Sp.

Upper Division Courses (see prerequisites for upper division)

340 Macroeconomic Analysis 3 hrs.
Comprehensive study of the national economic system. Interdependent market processes in determining income, consumption, saving, investment, interest, employment, and the price level. Economic growth as influenced by institutional structure, technological change, business management, and government monetary and fiscal policy. Application of economic accounting structure and method. Prerequisite: ECN 143, and permission of the department chair.

345 Microeconomic Analysis 3 hrs.
Economic principles underlying value and distribution with additional training in application of these principles to problems of analysis. Prerequisite: ECN 143, and permission of the department chair.

470 Seminar in Economics 3 hrs.
Extensive readings and reports reflecting current developments and trends in economic theory and its application to the decision-making process in business and government. Prerequisite: Permission of the department chair.

Finance (FIN)

Upper Division Courses (see prerequisites for upper division)

301 Principles of Finance 3 hrs.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>352</td>
<td>Money and Banking</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. Prerequisite: ECN 143. F.</td>
<td></td>
</tr>
<tr>
<td>361</td>
<td>Investments</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Structure and performance of equity markets. Market designs and regulation, the measurement of market performance and the institutional framework of equity and bond markets. Prerequisite: FIN 301. F.</td>
<td></td>
</tr>
<tr>
<td>375</td>
<td>Financial Institutions</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Role and activities of financial intermediaries as they affect flow of funds and capital formation. Money markets and capital markets in which these institutions operate. Prerequisite: FIN 301 and FIN 352. W.</td>
<td></td>
</tr>
<tr>
<td>378</td>
<td>Long-term Capital Management</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Financial theory as it relates to corporate policy, the efficient market hypothesis, capital structure theory, long-term financing and dividend policies. Prerequisite: FIN 301. W.</td>
<td></td>
</tr>
<tr>
<td>395</td>
<td>Advanced Topics in Corporate Finance</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Role of options, warrants, convertibles, leasing, mergers, acquisitions, and pension plans in a corporate environment. Prerequisite: FIN 378.</td>
<td></td>
</tr>
<tr>
<td>431</td>
<td>Short-term Capital Management</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Financial principles applied to financial management problems such as cash management; payables and receivables management; cost of short-term credit; and forecasting and financial planning. Prerequisite: FIN 301. Lab Fee: Level 1. F.</td>
<td></td>
</tr>
<tr>
<td>454</td>
<td>International Finance</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. Prerequisite: FIN 352 and senior standing or approval of department chair. W, Sp.</td>
<td></td>
</tr>
<tr>
<td>470</td>
<td>Seminar in Finance</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>490</td>
<td>Special Projects</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Independent study in an area of interest to the student in the field of finance. Prerequisite: Senior standing and approval of department chair.</td>
<td></td>
</tr>
<tr>
<td>495</td>
<td>Internship in Finance</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. Prerequisite: Senior standing and approval of department chair. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis.</td>
<td></td>
</tr>
</tbody>
</table>

Management (MGT)

Lower Division Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Introduction to Business</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Career options for students interested in business are stressed. Fundamentals of business organizations, effective management and the functions of business are explored.</td>
<td></td>
</tr>
</tbody>
</table>
101 Introduction to Entrepreneurship
Introduction to the management of a small business and the entrepreneurial career. Focuses on elementary concepts of planning, financing, developing, and managing a new business. Lab Fee: Level 5, F.

Upper Division Courses (see prerequisites for upper division)
300 Introduction to Procurement
Explores the primary aspects of the procurement and management of material resources necessary for government or business operation. Introduction to the broad concepts of procurement and material management to include the generation of a requirement, forecasting, funding, the procurement cycle through award of a contract, inventory control, and distribution. Lab fee: Level 1, F.

301 Managing Organizations: Theory, Behavior, and Communications
Elements of the managerial process fundamental to successful operation of various types of enterprises including a study of organization theory, behavior, and interpersonal communication. Prerequisite: junior standing. Lab Fee: Level 2. Su, F, W, Sp.

302 Contract Administration
Intensive review of contract administration functions and responsibilities beginning when a contract is awarded and continuing until the contract is terminated or delivery is made and all aspects of the contract have been performed. Includes consideration of the roles of small business and sub-contractors. Prerequisite: MGT 300. Lab Fee: Level 2. W.

303 Cost and Price Analysis
Tools and techniques available for cost/price estimating, cost/price analysis, projection techniques, factors affecting profit or fee, the weighted guidelines technique of profit analysis and application of the learning curve theory. After cost/price analysis has been performed, negotiation strategies and techniques are developed. Prerequisite: MGT 300. Lab Fee: Level 2. W.

361 Organizational Behavior
Behavioral-science and social-systems approach to behavior of people at work in organizations. Behavioral decision-making, organizational theory, communication process, work motivation, groups, leadership, organizational climate, organizational development and other aspects of human behavior in organizations. Prerequisite: MGT 301. Lab Fee: Level 2. F, Sp.

362 Management and Labor Relations
Psychological and institutional factors as well as economic analysis of major aspects of such problems as employment, wages, hours, unionism, labor-management relations, and social security. Prerequisite: MGT 301. Lab Fee: Level 2. F, Sp.

363 Personnel: Human Resource Management
Theories and practices related to personnel functions such as recruitment, selection, orientation and placement, training, evaluation, promotion, and compensation. Recent research in human resource management; valuable to students majoring in other areas related to these functions. Prerequisite: MGT 301. Lab Fee: Level 2. Sp, W.

404 Negotiation Techniques
Develops principles, skills and techniques for effective negotiation of procurement actions. Includes verbal and nonverbal mannerisms, need to communicate, team approach, buyer's preparation for negotiations, and various tactics and strategies for negotiating. Prerequisites: senior standing and MGT 303. Lab Fee: Level 2. Sp.

405 New Venture Strategies
Theory and application of strategies for start-up, operation and control of new ventures. Role of entrepreneurship in the economy. Case studies of corporate and independent new ventures. Prerequisites: MGT 301 and senior standing. Lab Fee: Level 2. W.
406 Government Contract Law 3 hrs.
Application of the legal principles governing government contracts as evolved from common law, statutes, regulations, and court and board decisions. Application of law to each step of the federal procurement and federal assistance process. Prerequisites: senior standing, MGT 302, 303 and BLS 211. Lab Fee: Level 2. Sp.

Explores the complex relationships existing between business, government, and society. Seeks through both the primary and auxiliary texts to examine the ethical considerations inherent in these relationships. Prerequisites: MGT 301, MKT 301, and senior standing. Lab Fee: Level 2.

440 Honors: Small Business Counseling 3 hrs.
Practical exposure to problems and opportunities of small business firms. Assignment of student teams as counseling unit to assist local business managers with identification of problems and formulation of alternative solutions, as well as identification of areas of opportunity within the organization. A selection of students with demonstrated ability to understand and apply knowledge from several disciplines to day-to-day operations of business enterprise. Prerequisite: approval of SBDC director. Su, F, W, Sp.

450 International Management 3 hrs.
Management of the multinational business enterprise in interaction with its political, economic, social, cultural, and legal environments. Prerequisites: MGT 301 and senior standing. Lab Fee: Level 2. F, Sp.

460 Employee Training and Development 3 hrs.
Introduction to the development of employee training and development programs, assessment of training needs, program evaluation, and organizational development. Prerequisites: MGT 361, MGT 362. W.

461 Wage and Salary Administration 3 hrs.
Introduction to compensation practices, legal constraints, wage and salary determination, and benefits programs. Prerequisites: MGT 301, MGT 362, MGT 363.

462 Government Regulation of Human Resource Management 3 hrs.
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 unfair dismissal, equal employment opportunity, unemployment, occupational safety and health, employee privacy, and union-management relations. These topics will be analyzed from a multidisciplinary perspective. Prerequisite: MGT 301. Lab Fee: Level 1. F, Sp.

470 Special Topics in Technology Management 3 hrs.
Investigation of current theory, research, and practice on selected topics related to management in the high technology environment. Prerequisites: MGT 301 and senior standing. Lab Fee: Level 2.

490 Special Projects 3 hrs.
Independent study in an area of interest to the student in the field of management. Prerequisites: senior standing and approval of department chair.

495 Internship in Management 3 hrs.
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. Prerequisites: Senior standing, approval of the department chair, and subject to college's guidelines on internships. Course grade will be given on a satisfactory (S) unsatisfactory (U) basis.
Management Information Systems (MIS)

Lower Division Courses

101 Microcomputing I
Introduction to the use of microcomputing hardware and software with an emphasis on microcomputer operating system and spreadsheet software. Lab Fee: Level 1.

102 Microcomputing II
Introduction to word processing software and advanced topics in the use of spreadsheet software. Prerequisite MIS 101. Lab Fee: Level 1.

201 Computer Applications in Business
Evaluation of digital computers. Overall structure of computer problem solving and method of constructing computer solution. Overview of hardware/software systems. Data and information processing in organizations and other computer uses in management. Programming in BASIC and the use of business software packages such as word processing, decision support systems, spreadsheets and database concepts on personal computers. Applications and examples will generally be from administrative areas. Prerequisites: MIS 102, MA 121 or MA 143 or Level III placement. Lab Fee: Level 5.

210 Introduction to Computer Programming in Business
Fundamentals of structured design and programming using a procedural language such as COBOL. Table handling and hierarchical data structure. Prerequisites: MIS 201 or CS 108. Lab fee: Level 6.

Upper Division Courses (see prerequisites for upper division)

301 Information Systems in Organizations
Understanding the role of information systems in organizations and how they relate to organizational objectives and organizational structure. Introduces information system applications. Prerequisites: MIS 102, MIS 201, MSC 287, ACC 211, and ACC 212. Lab Fee: Level 4.

310 Advanced Computer Programming in Business
Advanced business language such as COBOL features, control language and file handling (sequential, random and indexed sequential), program structure documentation, and maintenance. Course project in development and documentation of significant business application. Prerequisite: MIS 210. Lab Fee: Level 6. Su, W.

340 Data Bases for Management
Management of data resources to effectively support the information systems of organizations. Concepts supported by use of current DBMS software on mainframe and/or PC. Prerequisites: MIS 210, MIS 301. Lab Fee: Level 6.
350 Advanced Data Bases for Management  
In-depth investigation of data modeling, system development, and data administration in a data base environment. Course project in development and documentation of significant business applications. Prerequisite: MIS 340. Lab Fee: Level 6.

400 Decision Support Systems and Expert Systems  
Analysis of information system components and technologies which aid the manager in the decision making process. Concepts supported by use of current DSS/ES software. Prerequisites: MIS 301, MGT 301, MKT 301, FIN 301, and MSC 385. Lab Fee: Level 3.

407 Accounting Information Systems  
Design, operation, analysis of accounting information systems with respect to data input, processing, storage, recall, security, internal control, and the audit trail. Emphasis will be placed on computerized systems. Prerequisites: MIS 301, ACC 212. (Same as ACC 407). Lab Fee: Level 4.

412 Information Systems Design and Implementation  
Advanced coverage of the strategies and techniques of structured systems development. Emphasizes information analysis and the logical specifications of the system. Students prepare exercises and case studies to develop proficiency in information analysis techniques. Integrates computer technology, systems analysis, systems design, and organizational behavior in designing large scale application or decision support systems. Prerequisites: MIS 210, MIS 301. Lab Fee: Level 6.

460 Data Communication and Distributed Processing  
Overview of geographically distributed computer-communications facilities. Network design, structure and optimization are addressed. Regulated common carriers, data transmission, routine techniques, reliability, protocols, error detection, modems and controllers are included. Prerequisite: MIS 301. Lab Fee: Level 2.

475 Information Resource Management  
Overview of the management of the information systems resources of the firm. Prerequisite: MIS 412. Lab Fee: Level 3.

480 Seminar in Management Information Systems  
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. Prerequisites: senior standing and approval of department chair. Lab Fee: Level 5.

490 Special Projects  
Independent study in an area of interest to the student in the field of management information systems. Prerequisite: senior standing and approval of Department Chair. Lab Fee: Level 5.

495 Internship in Information Systems  
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. Prerequisites: senior standing and approval of department chair. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis.

499 Systems Development Project  
Capstone course emphasizing the development of a computer application via the life cycle methodology. Term projects will produce current system specifications, devise logical system design, develop a physical design for a new design and implement the design to the extent possible. Prerequisites: MIS 412, MIS 475, MIS 310 or MIS 350. Lab Fee: Level 6.
Management Science (MSC)

Lower Division Courses

287 Statistical Analysis 3 hrs.
Introduction to the concepts of probability and business statistics. Topics include collection, classification, and presentation of data, measures of central tendency, and dispersion of data; probability distributions; confidence limits and hypothesis testing. Prerequisite: MIS 101, MA 143 and 151 or other Level III MA. Lab Fee: Level 15.

Upper Division Courses (see prerequisites for upper division)

325 Quantitative Methods in Business 3 hrs.
Statistical and quantitative modeling and problem solving methods used in business. Topics include correlation, Chi-square, analysis of variance, regression, linear programming, decision theory, simulation, and queueing analysis. Prerequisites: MA 151, MIS 201, MSC 287. Lab Fee: Level 5.

385 Production/Operations Management 3 hrs.
Survey of the concepts, processes, and institutions involved with the production function of a firm. Topics include forecasting, production planning, and control, materials management, and quality control. Applications of management science tools to production problems. Prerequisites: MA 151, MIS 201, MSC 287, MSC 325. Lab Fee: Level 5.

Analysis of information system components and technologies which aid the manager in the decision making process. Concepts supported by use of current DSS/ES software. Prerequisites: MIS 301, MGT 301, MKT 301, FIN 301, and MSC 385. Lab Fee: Level 3.

470 International Production Management 3 hrs.
Current topics related to international production management, such as Japanese production management systems, “off shore” production arrangements, joint production systems, vertical quality management. Prerequisites: MSC 385.

486 Advanced Production/Operations Management 3 hrs.
Further examination of the concepts, processes, and institutions involved with the production function of a firm. Topics include forecasting, production planning and control, materials management, and quality control. Applications of management science tools to production problems. Prerequisite: MSC 385. Lab Fee: Level 3.

490 Special Projects 3 hrs.
Independent study in an area of interest to the student in the field of management science. Prerequisites: senior standing and approval of department chair.

495 Internship in Management Science 3 hrs.
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. Prerequisites: senior standing and approval of Department Chair. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis.

Marketing (MKT)

Upper Division Courses (see prerequisites for upper division)

301 Principles of Marketing 3 hrs.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lab Fee</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>315</td>
<td>Sales Management and Professional Selling</td>
<td>3 hrs.</td>
<td>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. Prerequisite: MKT 301. Lab Fee: Level 2. F, W.</td>
<td></td>
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</tr>
<tr>
<td>316</td>
<td>Retailing Policy and Management</td>
<td>3 hrs.</td>
<td>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. Prerequisite: MKT 301. Lab Fee: Level 2.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>332</td>
<td>Consumer Behavior</td>
<td>3 hrs.</td>
<td>Interdisciplinary approach to analyze and interpret consumer buying habits and motives and the resultant purchases of goods and services. Purchaser’s psychological, economic, and sociocultural actions and reactions as they relate to better understanding of consumption. Prerequisite: MKT 301. Lab Fee: Level 2. W., Sp.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>342</td>
<td>Promotional Strategy</td>
<td>3 hrs.</td>
<td>Promotional techniques available to marketing management. Consumer behavior and communication process means by which products can be effectively promoted. Specific tools of personal selling, advertising, sales promotion, and publicity as components of overall promotional strategy. Prerequisite: MKT 301. Lab Fee: Level 2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>343</td>
<td>Marketing Research Design</td>
<td>3 hrs.</td>
<td>Introduction to the principles and purposes of marketing research; relationship to other marketing functions and marketing information systems, data sources, review of research methodologies and ethical considerations. Prerequisites: MKT 301 and MSC 287. Lab Fee: Level 3. W. Sp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>344</td>
<td>Marketing Research Applications</td>
<td>3 hrs.</td>
<td>Application of the principles and purposes of marketing research; laboratory, field and historical research methodologies, experimental design, sampling procedures, questionnaire design, and data analysis. Prerequisites: MSC 287, 325, MKT 301, 343. Lab Fee: Level 3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>345</td>
<td>Market Channel Structure and Strategy</td>
<td>3 hrs.</td>
<td>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. Prerequisite: MKT 301. Lab Fee: Level 2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>414</td>
<td>New Product Development</td>
<td>3 hrs.</td>
<td>Comprehensive review of the new product development process. Specialized application of marketing research and marketing strategy to new product development, concept development and concept testing. Prerequisites: MKT 301, 343, 344, MSC 325. Lab Fee: Level 2.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>415</td>
<td>International Marketing</td>
<td>3 hrs.</td>
<td>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. Prerequisites: MKT 301 and senior standing. Lab Fee: Level 2. F, Sp.</td>
<td></td>
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<tr>
<td>470</td>
<td>Marketing in a High Technology Environment</td>
<td>3 hrs.</td>
<td>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 govern-</td>
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</tr>
</tbody>
</table>
ments. These issues are evaluated within the context of a high technology environment. Using a seminar format, case analysis and class participation are important dimensions. Prerequisites: MKT 301 and 6 hrs. MKT and senior standing. Lab Fee: Level 2. F, W.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>480</td>
<td>Marketing Management</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. Prerequisites: MSC 325, MKT 332, 343, 344, and senior standing. Lab Fee: Level 2. F, Sp.</td>
<td></td>
</tr>
<tr>
<td>490</td>
<td>Special Projects</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Independent study in an area of interest to the student in the field of marketing. Prerequisite: senior standing and approval of the department chair.</td>
<td></td>
</tr>
<tr>
<td>495</td>
<td>Internship in Marketing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Active involvement in a project in a business enterprise, professional organization or in government agency that has particular interest and relevance to the student. Prerequisites: Senior standing, approval of department chair, and subject to college’s guidelines on internship. Course grade will be given on a satisfactory (S)/unsatisfactory (U) basis.</td>
<td></td>
</tr>
</tbody>
</table>
Engineering is the profession that translates scientific thought into reality. By combining synthesis, analysis and design in creative and innovative modes, the engineer produces systems, processes and products for the benefit of mankind. Those who desire to be part of this important effort can gain entry into the engineering profession by attending UAH. The UAH College of Engineering is located in an urban area and also in the state’s high technology area. Close proximity to the Marshall Space Flight Center, Redstone Arsenal and much of Alabama’s fastest growing technological industry gives the College of Engineering a special character that leads to outstanding educational opportunities for its students. This special setting combined with a high quality faculty affords maximum growth potential for those desiring to pursue a career in engineering.

The UAH College of Engineering is strongly committed to the advising of both undergraduate and graduate students. As such, students are requested to contact the Dean’s Office as soon as possible for initial advising.

Laboratory fees have been eliminated from engineering courses. A surcharge (presently $12/hr) is assessed on all engineering courses. The proceeds are earmarked for the upgrading of engineering laboratories, and for the acquisition, maintenance, repair and replacement of instrumentation and equipment to support the various engineering programs.

Degrees and Programs

The College of Engineering offers The Bachelor of Science in Engineering degree with options in chemical engineering, civil engineering, computer engineering, electrical engineering, industrial and systems engineering, mechanical engineering (including a concentration in aerospace engineering), and optical engineering. The undergraduate engineering programs are built around a core consisting of courses in mathematics, the physical sciences, humanities, and engineering. Students then take additional engineering courses in the areas of their specializations. The net result is that at UAH, engineering students first develop breadth in important fundamental areas and then depth in their particular field of specialization. This gives an added dimension to UAH engineering graduates that enhances their professional performance. The UAH engineering student is also able to obtain real world engineering experience through the Cooperative Education Program or by part-time work with the many governmental and industrial facilities in Huntsville.

Graduate degrees offered in engineering include the Master of Science in Engineering, a Master of Science in Operations Research and the Doctor of Philosophy. Interaction with the high technology area of Huntsville strongly enhances the high quality engineering graduate programs and thereby offers the candidate a degree that has added significance.

When desirable, as evidenced from continuous studies, the College of Engineering may modify its curricula and specific courses of instruction, alter requirements for admission or for graduation, and change degrees to be awarded.
Requirements for an Engineering Cluster

Students with non-engineering majors who choose a cluster in engineering, must take a minimum of 21 hours in engineering courses exclusive of the prerequisites. Each engineering program director will maintain one or more lists of specific courses comprising an approved cluster. Students must have the intended cluster approved by the College of Engineering prior to enrollment in engineering courses.

Course Numbers

Course numbers are coded for engineering by prefixes as follows:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td>Aerospace Engineering</td>
</tr>
<tr>
<td>CHE</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>CPE</td>
<td>Computer Engineering</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>ISE</td>
<td>Industrial and Systems Engine</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>OPE</td>
<td>Optical Engineering</td>
</tr>
</tbody>
</table>

Bachelor of Science in Engineering Degree Program

The engineering program has as its primary objective the preparation of qualified students for careers in any one of many engineering disciplines, for research, and for advanced studies. It stresses a broad education in mathematics, physical sciences, liberal arts, social sciences, engineering science, and engineering design and synthesis.

The College of Engineering achieves this objective by offering a unified program of undergraduate engineering studies that serve as a foundation for creative participation in most areas of engineering, especially those associated with new evolving technologies. All engineering students follow a common curriculum with specialization in the junior and senior years in chemical engineering, civil engineering, computer engineering, electrical engineering, industrial and systems engineering, optical engineering, or mechanical engineering. The chemical engineering, civil engineering, electrical engineering, industrial and systems engineering, and mechanical engineering options are accredited by the Accreditation Board for Engineering and Technology (ABET). The other options are under preparation for ABET accreditation evaluation. The degree awarded is the Bachelor of Science in Engineering (B.S.E.).

High School Preparation, Prerequisite Courses, and Transfer Credit

Students who intend to pursue the BSE degree should read the section on undergraduate admissions information. Students who have had inadequate preparation or who are placed in certain lower-level classes because of results of placement tests will have to take one or more of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 003</td>
<td>Basic English</td>
<td>No credit</td>
</tr>
<tr>
<td>EH 101</td>
<td>Freshman Composition</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CH 101</td>
<td>General Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CH 105</td>
<td>General Chemistry Laboratory</td>
<td>1 hr.</td>
</tr>
<tr>
<td>MA 119</td>
<td>Precalculus I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 121</td>
<td>Precalculus II</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

These courses carry the academic credit indicated and will appear on transcripts of students who successfully complete the courses. Since these courses are prerequisite to courses required for the B.S.E., credit earned in one or more of these courses cannot be applied toward the minimum requirement for the B.S.E.
Credit for engineering courses taken in schools with ABET accredited programs is transferable to UAH. Engineering courses taken in non-ABET accredited programs may also be applied to a B.S.E. degree based on an appropriate examination (written or oral) at the discretion of the respective department. All inquiries concerning applicability of credit should be made to the Associate Dean of Engineering.

Each student in the College of Engineering, especially those transferring from other institutions, must assume the responsibility for registering for all required courses in their proper sequence and for fulfilling all requirements for admission and graduation. Failure to do so may extend the time required for graduation. Each student should seek counseling and advice from the appropriate department or from the office of the dean.

The College of Engineering requires, after matriculation, that a grade of C or better be earned in each course that serves as a prerequisite to any course applied toward completing BSE degree requirements. If a grade of less than C is received in a course taken at UAH which is a prerequisite course, the course must be repeated and a grade of C or better earned BEFORE a student enrolls in the subsequent course. At UAH only one repeat attempt or a total of two attempts are allowed in any of these prerequisite courses.

Admission of high school graduates to one of the options in engineering is guided by the catalog section “Admissions Information.” The requirements for admission to one of the options for students with college credits either from UAH or by transfer are listed below:

<table>
<thead>
<tr>
<th>Semester Hrs. Attempted</th>
<th>Must have course equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18</td>
<td>MA 153, EE 197 and one of the following: MA 154 or Ch 121 &amp; 125 with an average of 2.5/4.0</td>
</tr>
<tr>
<td>19-30</td>
<td>MA 153, MA 154, CH 121 &amp; 125 and EE 197 with an average of 2.5/4.0</td>
</tr>
<tr>
<td>over 30</td>
<td>In addition to the above, other technical course work is considered in the decision to admit. All records will be forwarded to Engineering Advisement, EB 158 for entrance approval.</td>
</tr>
</tbody>
</table>

Students not admitted directly to one of the options may be admitted to preengineering.

Any student who wants to take an engineering course and who is not in the College of Engineering must obtain prior approval from the College of Engineering either through a program of study which requires the course, through a minor which lists the course, or by special permission (e.g. for transient students).

Students who have been admitted to pre-engineering may be admitted to one of the options if they have completed a minimum of MA 153, MA 154, CH 121, CH 125, and EE 197 and have a grade point average of at least 2.5/4.0 in all courses attempted in mathematics, chemistry, physics and engineering required for the BSE degree. Students who have not met these criteria by the time they have completed all required sophomore courses, and ISE 321, EE 300, and ME/CE 362 will not be permitted to take further engineering courses.

Any student admitted to the College of Engineering who is subsequently suspended from the University must, upon readmission to the University, reapply for admission to the College of Engineering.

Course Requirements

Students must successfully complete courses in each of six categories. The normally required courses are shown; however, the Dean of Engineering may approve other courses which also meet ABET guidelines.
1. Engineering core
   Computer Methods in Engr. - EE 197 3
   Statics - ME/CE 271 3
   Nature and Properties of Materials - ME/CHE 294 4
   Electrical Circuits I - EE 300 3
   Electronic Instrumentation Lab - EE 301 1
   Electronic Instrumentation - EE 311 3
   Engineering Economy - ISE 321 3
   Dynamics - ME/CE 362 3
   Introduction to Engineering Design - ME 493 2
   Semester Hours (25 hours)

2. English - EH 301 3

3. Humanities and social sciences (18 hours)
   Engineering students are required to take a total of 18 semester hours (in addition to EH) in the humanities and social sciences, including ECN 239 and PHL 392. The remaining 12 semester hours should be a balanced choice from the following areas: art history, literature, history, music appreciation, philosophy, sociology, psychology, political science, economics, and foreign languages other than a student’s native language(s). No more than six hours should be at the introductory level (courses with no prerequisites), and a two-course sequence in a given area is necessary to develop depth.
   Courses should be elected to fulfill an objective appropriate to the engineering profession. Courses treating subjects such as accounting, industrial management, finance, personnel administration, and ROTC normally do not fulfill this objective regardless of their general value in the total engineering curriculum.
   A list of courses which satisfy the humanities and social sciences electives is maintained in the Dean’s office.

4. Mathematics (18 hours)
   Calculus and Analytic Geometry - MA 153, 154, 233, 251 12
   Linear Algebra - MA 244 3
   Differential Equations - MA 324 3

5. Basic Sciences (12 and additional hours)
   General Physics - PH 111, 114, 112, 115 8
   Chemistry - CH 121, 125 4
   Additional courses are listed under each option.

6. Engineering options
   Students are required to take one of the following options:
   Chemical Engineering
   Civil Engineering
   Computer Engineering
   Electrical Engineering
   Industrial and Systems Engineering
   Mechanical Engineering
   Optical Engineering
   Each of these options is described under the portion of the catalog devoted to the respective programs.
CHEMICAL ENGINEERING

Degree: Bachelor of Science in Engineering

Professor Emeritus Grohse; Associate Professors Chen, Chittur, Smith (Chair); Assistant Professors Nadarajah, Thomas, Weimer.

Chemical engineering deals 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 and chemical reaction kinetics constitute the heart of chemical engineering. Chemical engineers work in many diverse fields ranging from production of the many basic chemical products required by our industrial society to research on major technical and social problems, including energy resources development and pollution control.

Chemical Engineering Option

To obtain a Bachelor of Science in Engineering degree with the chemical engineering option, students are required to take:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Basic Sciences</td>
</tr>
<tr>
<td>Chemistry-CH 123, 126, 223, 331, 332</td>
</tr>
<tr>
<td>Advanced science electives from approved area</td>
</tr>
<tr>
<td>Chemical Engineering Option</td>
</tr>
<tr>
<td>ME 198-Engineering Graphics</td>
</tr>
<tr>
<td>CHE 244-Stoichiometry</td>
</tr>
<tr>
<td>ME 341-Thermodynamics I</td>
</tr>
<tr>
<td>CHE 344-Chemical Engineering Thermodynamics</td>
</tr>
<tr>
<td>ME/CHE 352-Fluid Mechanics I</td>
</tr>
<tr>
<td>ME 396-Numerical Methods and Computations</td>
</tr>
<tr>
<td>CHE 440-Unit Operations Laboratory</td>
</tr>
<tr>
<td>CHE 441-Chemical Kinetics and Reactor Design</td>
</tr>
<tr>
<td>ME/CHE 442-Introduction to Heat and Mass Transfer</td>
</tr>
<tr>
<td>CHE 443-Mass Transfer Operations</td>
</tr>
<tr>
<td>CHE 445-Chemical Process Control</td>
</tr>
<tr>
<td>CHE 447-Chemical Engineering Design I</td>
</tr>
<tr>
<td>CHE 448-Chemical Engineering Design II</td>
</tr>
</tbody>
</table>

Students applying for graduation in the chemical engineering option must show evidence of having taken the Fundamentals of Engineering (FE) Examination. The examination is offered by the State of Alabama Board of Registration for Professional Engineers, 750 Washington Ave., Montgomery, AL. 36130-1001. Phone: (205) 261-5568. Contact the College of Engineering for further information.

Suggested Schedule of Courses for Full-time Chemical Engineering Students

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>HU/SS*</td>
<td>3</td>
<td>HU/SS*</td>
<td>3</td>
</tr>
<tr>
<td>MA 153</td>
<td>3</td>
<td>MA 154</td>
<td>3</td>
</tr>
<tr>
<td>CH 121,125</td>
<td>4</td>
<td>CH 123,126</td>
<td>4</td>
</tr>
<tr>
<td>ME 198</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

106
Undergraduate Chemical Engineering (CHE) Courses

244  Stoichiometry  3 hrs.
Introduction to basic calculations of chemical engineering, emphasizing material and
ergy balances on physical and chemical processes. Prerequisites: PH 111, CH 123,
EE 197.

Structure of matter, basic concepts of phase transformation, mechanical, electrical,
magnetic, and thermal properties, and corrosion. Basic properties of metals, plastics,
estomers, and ceramics with emphasis on methods of changing properties.
Laboratory included. Typical experiments include microstructure analysis, hardness
testing, mechanical-properties testing, equilibrium-phase diagrams, corrosion, creep
behavior, and semiconductor analysis. Prerequisite: CH 121, PH 112. (Same as ME
294).

344  Chemical Engineering Thermodynamics  3 hrs.
Thermodynamics of phase equilibria, chemical reactions and thermodynamic analy-
sis of chemical processes, with emphasis on topics of special interest to chemical
engineers. Prerequisites: CHE 244, ME 341.

352  Fluid Mechanics I  3 hrs.
Properties of fluids and fundamental principles governing fluid motion, including
fluid statics, conservation of mass, momentum and energy with applications to pipe,
and channel flows of incompressible fluids. Laboratory included. Prerequisites: ME
341, 362, MA 324. (Same as ME 352).

440  Unit Operations Laboratory  3 hrs.
Experimental studies covering topics from reaction kinetics, fluid flow, heat transfer,
and chemical thermodynamics with emphasis placed on written and oral laboratory
report presentation techniques. Prerequisite: CHE 344 or senior standing.

441  Chemical Kinetics and Reactor Design  3 hrs.
Fundamental principles of chemical kinetics and chemical reactor engineering along
with the design of both thermal and catalytic reactors. Prerequisites: CHE 344. (Same
as CHE 541.)
442 Introduction to Heat and Mass Transfer 4 hrs.
Principles of heat and mass transfer: application of principles to problems in conductive, convective, and radiative-heat transfer, and mass transfer; laminar and turbulent flow processes; boiling and condensation: heat exchangers. One credit hour laboratory included. Prerequisites: ME 341, 352, 396, MA 324. (Same as ME 442).

443 Mass Transfer Operations 3 hrs.
Theory of mass transfer phenomena, with applications to both stagewise and diffusion controlled distillation, gas absorption/desorption, humidification and extraction processes. Prerequisites: CHE 344, ME 442.

445 Chemical Process Control 3 hrs.
Fundamental principles of chemical process control; control system design for chemical processes. Prerequisites: MA 324, CHE 244.

447 Chemical Engineering Design I 3 hrs.
Component design of individual chemical engineering equipment to include solid/liquid handling, contacting devices and distribution systems. Introductory topics in computer-aided design will be discussed. Prerequisites: CHE 443, 445, ME 493.

448 Chemical Engineering Design II 3 hrs.
An overall team design effort, using modern computer-aided design techniques, to perform a preliminary design, simulation and economic evaluation of a chemical production flow sheet. Prerequisites: CHE 447, 441.

449 Introduction to Environmental Engineering 3 hrs.
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. Prerequisite: ME/CHE 442. (Same as CHE 549.)

450 Environmental Control 3 hrs.
Engineering design and synthesis of environmental control systems. Control of multiphase systems with application to air and water pollution control. Prerequisite: ME/CHE 442. (Same as CHE 550.)

452 Introduction to Air Pollution 3 hrs.
Technology of air pollution dealing with air pollutants, effects, sources, combustion processes, and abatement and control technology. Engineering contributions to both the problems and their solutions. Nature of air pollution problem and fundamental technological approaches to its solution. Prerequisite: graduate standing. Offered upon demand.

CIVIL AND ENVIRONMENTAL ENGINEERING

Degree: Bachelor of Science in Engineering

Professor Emeritus Kubitza; Professor Karr (Acting Chair); Associate Professors Campbell, Schonberg; Assistant Professors Crull, Leonard; Lecturers Aston, Pope, Worden.

The six main branches of civil engineering are: structural engineering, hydraulic engineering, geotechnical engineering, environmental engineering, transportation engineering, and construction engineering and management. Civil engineers in these disciplines are involved in the planning, analysis, and design of various projects, including buildings, bridges, dams, rocket launching platforms, canals, hydroelectric plants, large spacecraft structures, offshore drilling platforms, water treatment and distribution systems, wastewater treatment plants, groundwater
quality monitoring and restoration systems, highways, gas and oil pipelines, office complexes, and industrial parks. In their work civil engineers use traditional design and analysis approaches as well as advanced experimental and computational techniques.

**Degree Requirements**

To obtain a Bachelor of Science in Engineering, civil and environmental engineering students are required to take:

<table>
<thead>
<tr>
<th>Additional Basic Sciences</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry - CH 123, 126</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Civil and Environmental Engineering Option</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 198 - Engineering Graphics</td>
<td>2</td>
</tr>
<tr>
<td>CE 284 - Land Surveying I</td>
<td>2</td>
</tr>
<tr>
<td>ME 341 - Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME/CHE 352 - Fluid Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>ME/CE 370 - Mechanics of Materials</td>
<td>4</td>
</tr>
<tr>
<td>ME 396 - Numerical Methods and Computations</td>
<td>2</td>
</tr>
<tr>
<td>CE 325 - CAD Seminar</td>
<td>0</td>
</tr>
<tr>
<td>CE 371 - Structural Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>CE 372 - Soil Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>CE 404 - Structural Design</td>
<td>3</td>
</tr>
<tr>
<td>CE 449 - Intro. to Environmental Engr.</td>
<td>3</td>
</tr>
<tr>
<td>CE 472 - Hydraulic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CE 473 - Transportation Engineering and Design</td>
<td>3</td>
</tr>
<tr>
<td>CE 480 - Civil Engineering Design Project</td>
<td>3</td>
</tr>
<tr>
<td>Civil Engineering Electives</td>
<td>9</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Structural Engineering Option</th>
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</thead>
<tbody>
<tr>
<td>CE 381 - Structural Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>CE 403 - Reinforced Concrete Design</td>
<td>3</td>
</tr>
<tr>
<td>CE 485 - Foundation Engineering</td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Engineering Option</th>
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</thead>
<tbody>
<tr>
<td>ISE 390 - Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>CE 475 - Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CE 476 - Water Quality Control</td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>General Civil Engineering Option</th>
<th></th>
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<tbody>
<tr>
<td>Choose 9 hours from CE 381, 403, 475, and 476, subject to satisfactory completion of prerequisite requirements.</td>
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</tbody>
</table>

*Technical Electives

A total of 136 hours is required for the degree. Courses with a CE prefix are typically offered once a year, except for Statics, Dynamics, and Mechanics of Materials. Civil engineering students are encouraged to seek the advice of a full-time civil engineering faculty member as soon as possible after their enrollment at UAH to ensure the timely completion of their program of study.

Students applying for graduation must show evidence of having taken the Fundamentals of Engineering (FE) Examination. The examination is offered by the State of Alabama Board of Registration for Professional Engineers, 750 Washington Ave., Montgomery, AL, 36130-1001. Phone: (205) 261-5568. Contact the College of Engineering for further information.
### Undergraduate Civil and Environmental Engineering Courses (CE)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>271 Statics</td>
<td>3 hrs.</td>
<td>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. Prerequisites of parallel MA 251, PH 112 (Same as ME 271).</td>
</tr>
<tr>
<td>284 Land Surveying I</td>
<td>2 hrs.</td>
<td>Use of tape, level, and transit with applications to planimetric and topographic mapping, traverse and area computations, and stadia. Introduction to construction surveys. Laboratory work included. Prerequisite: ME 198 or consent of instructor.</td>
</tr>
<tr>
<td>325 CAD Seminar</td>
<td>no credit</td>
<td>Use of computer aided design (CAD) systems and other appropriate topics. Seminar Course. Satisfactory/Unsatisfactory grading system. Prerequisite: Junior standing.</td>
</tr>
<tr>
<td>362 Dynamics</td>
<td>3 hrs.</td>
<td>Kinematics and kinetics of 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. Prerequisite: ME/CE 271 (same as ME 362).</td>
</tr>
</tbody>
</table>
Mechanics of Materials 4 hrs.
Topics include: theory of stress and 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. Required laboratory section includes: the determination of selected properties of various engineering materials, experimental verification of theories presented, use of strain measuring devices, test procedures, instrumentation, and interpretation of results. Prerequisites: ME/CE 271, ME/CHE 294 (Same as ME 370).

Structural Analysis I 3 hrs.
Reactions, shears, moments in determinate structures. Influence lines, energy methods in computing deformations. Introduction to indeterminate structures. Prerequisites: ME/CE 362, 370.

Soil Mechanics 4 hrs.
Index properties and characteristics of soils. Compaction shear, compressibility and permeability. Application to analysis and design of foundation elements. Laboratory included. Prerequisites: ME/CE 352, ME/CE 370.

Hydraulics 3 hrs.
Conservation principles of mass, momentum, and energy and their applications to hydraulic problems. Open channel flows, pipe flows and their application to water supplies in sanitary engineering, flow measurements. Prerequisite: ME/CE 370.

Hydraulics Lab 1 hr.
Experiments on water table, open channels, Venturi meter, Pelton and Francis turbines, data analysis, head loss in pipe flow, and pitot static tubes. Prerequisite: CE 375.

Engineering Design Project Credit to be arranged
Individualized design project under supervision of instructor. Prerequisite: Junior standing.

Structural Analysis II hrs.
Reactions, shears, moments and deformations in complex structural systems. Statically indeterminate systems, advanced geometric and energy methods. Prerequisites: CE 371, 325.

Land Surveying II 3 hrs.
History and methods of surveying public lands of the United States. Problems in resurveys of public lands: topography, mapping, construction surveys, and boundary surveys. Topographic surveying project, computer applications and laboratory work included. Prerequisite: ME 198 or consent of instructor.

Reinforced Concrete Design 3 hrs.
Design of reinforced concrete structures with emphasis on the ultimate strength method. Computer applications. Prerequisite: CE 381.

Structural Design 3 hrs.
Principles of design of steel structures using ASD methods. Analysis and design of structural elements including beams, columns, connection details. Prerequisite: CE 381.

Concrete Mix Proportioning 3 hrs.
Classification of concrete aggregates and their effects on concrete properties. Mixing, placing, and testing of normal weight, high strength, and lightweight concretes. Proportioning according to ACI methods. Laboratory included.

Introduction to Environmental Engineering 3 hrs.
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)
459 Selected Topics in Civil Engineering
Credit to be arranged

461 Vibrations of Elastic Systems
3 hrs.
Formulation of the equations of motion of discrete and continuous systems, analytical
and numerical methods of solution, eigenvalue problems and dynamic response.
Prerequisite: ME 488. (Same as CE 561 and ME 461/561).

472 Hydraulic Engineering
3 hrs.
Water-hammer analysis, open channel flow, hydraulic structures such as dams, spill­
ways, stilling basins, flood control devices, locks, pipe-flow systems and water-sup­
ply facilities, computational methods. Prerequisites: CE 325, ME/CHE 352.

473 Transportation Engineering and Design
3 hrs.
Theory, design, and operation of various modes of transportation with emphasis on
traffic flow. Prerequisite: CE 284.

474 Applied Mechanics of Solids
3 hrs.
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. Prerequisite: ME/CE 370. (Same as CE 574 and ME
474/574).

475 Hydrology
2 hrs.
Hydrologic cycles and engineering impact for rainfall and runoff analysis, hydro­
graph analysis, watershed studies, overland flow and flood routing flood probabil­
ties, and hydrologic forecast. Prerequisites: CE 325, ME/CHE 352.

476 Water Quality Control Processes
3 hrs.
Principles of public water-supply design. Source selection, collection, purification,
and distribution for municipal use. Collection of waste waters, their treatment, and
disposal. Laboratory work included. Prerequisites: CE 325, 372.

477 Fundamentals of Experimental Mechanics
3 hrs.
Experimental methods to determine stress, strain, displacement, velocity, and accelera­
tion in various media. Theory and laboratory applications of electrical resistance
strain gages, brittle coatings, and photo-elasticity. Application of transducers and
experimental analysis of engineering systems. Prerequisites: ME/CE 370 and junior
standing (Same as CE 577 and ME 477/577).

478 Matrix Methods in Structural Mechanics
3 hrs.
Matrix application to formulation and solution of linear problems in structural
mechanics. Stresses, vibrations, and stability of engineering structures. Prerequisite:
CE 381. (Same as CE 578 and ME 478/578).

480 Civil Engineering Design Project
3 hrs.
Analysis and design of a complete civil engineering project including establishment of
design criteria, cost estimates, specifications, and plans. Prerequisite: Senior standing.

481 Advanced Soil Mechanics
3 hrs.
Continuum mechanics applied to soil behavior. Theoretical approaches to consolidation,
shear strength, slope stability and soil stabilization. Prerequisite: CE 372. (Same
as CE 581).

482 Soil Dynamics
3 hrs.
Behavior of soils under dynamic, earthquake and blast loading. Analysis of founda­
tion vibration and isolation. Prerequisite: CE 372. (Same as CE 582.)

485 Foundation Engineering
3 hrs.
Design of foundations with emphasis on reinforced concrete, footings, caissons, piles,
retaining walls, and mat foundations. Effect of bearing pressure on foundations.
Prerequisites: CE 372 and 403. (Same as CE 585.)
Electrical and computer engineering today is concerned with the broad problem of generating, transmitting, receiving, and processing information and energy. Emphasis in the department is on "information" related areas: antennas and microwaves, communications and signal processing, computer engineering, control and system theory, electronics, network theory, and solid state devices. New thrust areas under development include optical engineering and robotics.

Computer Engineering Option

The Department of Electrical and Computer Engineering offers a four-year program leading to a Bachelor of Science in Engineering degree with an option in computer engineering. The purpose of the program is to produce a well-educated individual, a practitioner of engineering design—one who becomes a specialist in the design, analysis and application of computer systems. The student will develop a background in non-engineering areas, such as English, mathematics, basic science and humanities and social sciences. In addition, the student will take the engineering core curriculum and courses from computer science. More importantly, the student will be deeply involved in engineering design and in specialty subjects in computer engineering. The computer engineer is a professional who considers carefully the ethical role of the engineer in dealing with a broad spectrum of commercial, legal, and moral issues. A graduate computer engineer will be involved in a number of technical specialties which include computer architecture, interface design, communications and networking, and software engineering.

Additional Basic Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>General Physics with Calculus III - PH 113</td>
<td>3</td>
</tr>
<tr>
<td>General Physics Lab III - PH 116</td>
<td>1</td>
</tr>
</tbody>
</table>

Computer Engineering Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPE 201 Digital Logic Design Lab</td>
<td>2</td>
</tr>
<tr>
<td>EE 202 Introduction to Digital Logic Design</td>
<td>3</td>
</tr>
<tr>
<td>EE 303 Electrical Engineering Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EE 305 Electronics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>EE 313 Electrical Circuits II</td>
<td>3</td>
</tr>
<tr>
<td>EE 315 Electronics I</td>
<td>3</td>
</tr>
<tr>
<td>EE 382 Analytic Methods for Continuous Time Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE 383 Analytic Methods for Multivariable and Discrete Time Systems</td>
<td>3</td>
</tr>
<tr>
<td>ISE 390 Probability and Engineering Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>EE 402 Design of Digital Computer</td>
<td>3</td>
</tr>
<tr>
<td>EE 429 Microcomputers</td>
<td>3</td>
</tr>
<tr>
<td>CPE 433 Advanced Techniques in Computer Design</td>
<td>3</td>
</tr>
<tr>
<td>CPE 427 Computer Engineering Design I</td>
<td>1</td>
</tr>
<tr>
<td>CPE 437 Computer Engineering Design II</td>
<td>1</td>
</tr>
<tr>
<td>CPE 447 Computer Engineering Design III</td>
<td>1</td>
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<tr>
<td>*Engineering Electives</td>
<td>3</td>
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</tbody>
</table>
Undergraduate Computer Engineering Courses (CPE)

197 **Computer Methods in Engineering** 3 hrs.
Same as EE 197, except using PASCAL.

201 **Digital Logic Design Lab** 1 hr.
Experiments on logic gates, combinational logic circuit design, flipflops, sequential circuit design, counter registers, and shift registers. Parallel with EE 202.

203 **Fundamentals of Software Engineering** 3 hrs.
Introduction to structured programming using PASCAL. Search and sort algorithm. Introduction to data structures. Applications to engineering related problems. Prerequisite: EE 197.

325 **Principles of Digital Computer Systems** 3 hrs.
Introduction to minicomputers and microcomputers. Topics include: machine organization and operation; information control and transfer within a machine; data transfer and communication with external devices; computer response time; engineering applications of computers. Prerequisite: EE 311.
High Level Languages and Computer Hardware 2 hrs.
Application of high level languages in interrupt processing, real time clock management, device independent high level input/output operations, device drivers, microprocessor networks. Prerequisite: EE 202.

Computer Engineering Design I 1 hr.
Senior design project course involving microcomputer based systems. First design course on digital system design. Prerequisite: CS 308. Can be taken parallel with EE 402, EE 429.

Advanced Techniques in Computer Design 3 hrs.
Study of existing computer structures. Computer organization with emphasis on busing systems, storage systems, and instruction sets. Special purpose architectures, performance models and measures, VLSI influence on architecture. Fault-tolerant computer systems. Prerequisite: EE 427.

Computer Engineering Design II 1 hr.
Senior design project course involving microcomputer based systems. Second design course on digital system design. Prerequisite: EE 427.

Computer Engineering Design III 1 hr.
Senior design project course involving microcomputer based systems. Third design course on digital system design. Prerequisite: EE 437.

Electrical Engineering Option.
The electrical engineering option offers a background that enables a student to pursue careers in any of the many and diverse facets of electrical engineering such as electronics, network, power systems, instrumentation, computers, communications, and controls. The student may also select advanced undergraduate courses to develop individual and specific interests.

Semester Hours

| General Physics with Calculus III - PH 113 | 3 |
| General Physics Lab III - PH 116 | 1 |

Electrical Engineering Option

| EE 202 - Introduction to Logic Design | 3 |
| ME 396 - Numerical Methods and Computation | 2 |
| EE 313 and 303 - Electrical Circuits II and Lab | 4 |
| EE 315 and 305 - Electronics I and Lab | 4 |
| EE 307 - Electricity and Magnetism | 3 |
| ME 341 - Thermodynamics I | 3 |
| EE 382 - Analytical Methods for Continuous Time Systems | 3 |
| EE 383 - Analytical Methods for Multivariable and Discrete Time | 3 |
| EE 384 - Digital Signal Processing Lab | 1 |
| ISE 390 - Probability and Engineering Statistics I | 3 |
| EE 425 - Introduction to Control and Robotic Systems | 3 |
| Electrical engineering electives* | 15 |
| *Technical electives | 3 |

Technical course at level 300 or above.

Suggested Schedule of Courses for Full-time Electrical Engineering Students

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>HU/SS*</td>
<td>3</td>
<td>MA 154</td>
</tr>
<tr>
<td>MA 153</td>
<td>3</td>
<td>PH 111,114</td>
</tr>
<tr>
<td>CH 121,125</td>
<td>4</td>
<td>EE 197</td>
</tr>
</tbody>
</table>

10 10 10 30
Undergraduate Electrical Engineering Courses (EE)

197 Computer Methods in Engineering

Solution of engineering problems using a digital computer. Hardware structure of the stored-program computer; machine language programming; engineering approximation of dynamic systems; flowcharting and algorithms. Practice in solving engineering problems on the university computer using FORTRAN. Prerequisite: MA 121.

199 Computer Graphics

Principles of computer graphics; basic techniques, transforms in two and three dimensional space, perspective, hidden line removal. Includes hands-on experience with a color graphics system. Prerequisites: a course in FORTRAN or BASIC and MA 153.

202 Introduction to Digital Logic Design

Engineering approaches to design and analysis of digital logic circuits. Boolean algebra, Karnaugh maps, design using MSI and LSI components, algorithmic state and machine design of sequential circuits. Prerequisite: EE 197.

300 Electrical Circuits I

Electric circuit concepts; transient and steady-state solution of simple circuits. Phasor analysis of ac circuits and network theorems. Prerequisite: PH 112. Prerequisite or parallel: MA 324.

301 Electronic Instrumentation Laboratory

Experiments related to elementary electronic instrumentation, solid state semiconductor devices, amplifying circuits, and experiments using analog computer. Must parallel or follow EE 311.

303 Electrical Engineering Laboratory

Experiments related to electrical circuits and to apply and verify principles presented in EE 313. Prerequisite EE 301. Must follow or parallel EE 313.

305 Electronics Laboratory I

Experiments and reports related to amplifiers using bipolar JFET, MOSFET devices. Original design of individual circuits. Prerequisite: EE 301 and must follow or parallel EE 315.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>307</td>
<td>Electricity and Magnetism</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Basic concepts of electrostatics, electric</td>
<td></td>
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<td></td>
<td>potential theory, electric fields and currents,</td>
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<tr>
<td></td>
<td>fields of moving charge including relativistic</td>
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<tr>
<td></td>
<td>treatment, magnetic fields, Maxwell's</td>
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<tr>
<td></td>
<td>equations. Prerequisite: EE 300.</td>
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<tr>
<td>310</td>
<td>Solid State Fundamental</td>
<td>2 hrs.</td>
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<td></td>
<td>Basic physical processes occurring in solids.</td>
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<td></td>
<td>Crystal structure of solids, Schrodinger</td>
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<td></td>
<td>equation and its applications, free electron</td>
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<td></td>
<td>model of metals, band theory of solids,</td>
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<td></td>
<td>and physics of semiconductor devices. Prerequisite: PH 113, ME/CHE 294, and MA 324 or parallel.</td>
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<tr>
<td>311</td>
<td>Electronic Instrumentation</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Ammeters, voltmeters, and bridges. Transducers,</td>
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<tr>
<td></td>
<td>diode and transistor models, operational</td>
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<td></td>
<td>amplifiers, simple digital and analog</td>
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<tr>
<td></td>
<td>instrumentation, introduction to analog</td>
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<tr>
<td></td>
<td>computers. Prerequisites: EE 300.</td>
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<tr>
<td>313</td>
<td>Electrical Circuits II</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Transient response of circuits described by</td>
<td></td>
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<tr>
<td></td>
<td>second-order differential equations.</td>
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<td></td>
<td>Steady-state response to sinusoidal driving</td>
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<tr>
<td></td>
<td>functions, polyphase circuits, transfer</td>
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<td></td>
<td>functions, resonance, magnetically coupled</td>
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<td></td>
<td>circuits; basic concepts of network topology</td>
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<td></td>
<td>and analysis, matrix formulation of network</td>
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</tr>
<tr>
<td></td>
<td>equations, algorithms. Prerequisite: EE 300.</td>
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<tr>
<td>315</td>
<td>Electronics I</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Analysis of large and small signal electronic</td>
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<td></td>
<td>devices; piece-wise linear models of bipolar</td>
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<td></td>
<td>and FET devices; amplifiers and their</td>
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<td></td>
<td>frequency response, power supplies, and special</td>
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<td></td>
<td>circuit applications, computer simulation.</td>
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</tr>
<tr>
<td></td>
<td>Prerequisites: EE 311, 313.</td>
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<tr>
<td>382</td>
<td>Analytical Methods for Continuous Time Systems</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Fourier Series, Fourier and Laplace transforms</td>
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<td></td>
<td>with emphasis on their physical interpretation.</td>
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<tr>
<td></td>
<td>System representation by transfer functions and</td>
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<tr>
<td></td>
<td>impulse response functions. Convolution integral.</td>
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<tr>
<td></td>
<td>Transient response. Modeling and simulation.</td>
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<tr>
<td></td>
<td>Prerequisite: EE 313.</td>
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</tr>
<tr>
<td>383</td>
<td>Analytical Methods for Multivariable and</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Discrete Time Systems</td>
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<tr>
<td></td>
<td>Discrete time signals and systems, sampling</td>
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<tr>
<td></td>
<td>techniques, Z and discrete Fourier transforms,</td>
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<tr>
<td></td>
<td>multivariable systems. Introduction to digital</td>
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<tr>
<td></td>
<td>signal processing. Prerequisite: EE 382.</td>
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<tr>
<td>384</td>
<td>Digital Signal Processing Laboratory</td>
<td>1 hr.</td>
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<tr>
<td></td>
<td>Design and implementation of signal processing</td>
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<tr>
<td></td>
<td>algorithms using standard digital signal</td>
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<td></td>
<td>processing chips. Must parallel or follow EE 383.</td>
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<tr>
<td>402</td>
<td>Design of Digital Computer</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Functional organization of stored-program</td>
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<td></td>
<td>digital computers including number representation,</td>
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<tr>
<td></td>
<td>computer hardware, micro-operations, and control</td>
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<tr>
<td></td>
<td>logic; microprocessor architecture. Prerequisites: EE 202, 315.</td>
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<tr>
<td>404</td>
<td>Electrical Networks Laboratory</td>
<td>1 hr.</td>
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<tr>
<td></td>
<td>Experiments that apply and verify principles</td>
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<tr>
<td></td>
<td>presented in EE 382 and 414.</td>
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<tr>
<td></td>
<td>Prerequisite or parallel: EE 414.</td>
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<tr>
<td>406</td>
<td>Electronics Laboratory II</td>
<td>1 hr.</td>
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<tr>
<td></td>
<td>Experiments and reports related to electronic</td>
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<tr>
<td></td>
<td>devices such as oscillators, multi-stage</td>
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<td></td>
<td>amplifiers, modulation and switching circuits.</td>
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<td></td>
<td>Integrated circuits and microelectronics</td>
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<tr>
<td></td>
<td>methods. Prerequisite: EE 305 and must parallel</td>
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<tr>
<td></td>
<td>EE 416.</td>
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<tr>
<td>407</td>
<td>Electromagnetic wave</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Review of Maxwell's equations, uniform plane</td>
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<tr>
<td></td>
<td>waves in different types of media, reflection</td>
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<tr>
<td></td>
<td>and transmission of uniform plane waves,</td>
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<td>transmission lines, waveguides, antennas.</td>
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<td></td>
<td>Prerequisites: EE 307 and 313.</td>
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<td>Course Code</td>
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<tr>
<td>410</td>
<td>Selected Topics in Electrical Engineering</td>
<td>Credit</td>
</tr>
<tr>
<td>411</td>
<td>Electric Power System</td>
<td>3 hrs.</td>
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<tr>
<td>412</td>
<td>Senior Design Project in Electrical Engineering</td>
<td>Credit</td>
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<tr>
<td>414</td>
<td>Passive Electrical Networks</td>
<td>3 hrs.</td>
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<tr>
<td>416</td>
<td>Electronics II</td>
<td>3 hrs.</td>
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<tr>
<td>420</td>
<td>Random Signals and Noise</td>
<td>3 hrs.</td>
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<tr>
<td>421</td>
<td>Electric Machines</td>
<td>3 hrs.</td>
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<tr>
<td>422</td>
<td>Advanced Logic Circuits</td>
<td>3 hrs.</td>
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<tr>
<td>424</td>
<td>Instrumentation</td>
<td>3 hrs.</td>
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<tr>
<td>425</td>
<td>Introduction to Control and Robotic Systems</td>
<td>3 hrs.</td>
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<td>426</td>
<td>Communication Theory</td>
<td>3 hrs.</td>
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<td>429</td>
<td>Microcomputers</td>
<td>3 hrs.</td>
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<tr>
<td>433</td>
<td>Computer Simulation of Dynamic Systems</td>
<td>3 hrs.</td>
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</table>
tion techniques, including digital simulation languages. Review of modeling and model simplification techniques for lumped-parameter and continuum dynamic systems. Laboratory demonstrations and exercises. Prerequisite: EE 383. (Same as EE 513.)

436 Digital Electronics 3 hrs.
Electronic devices. Integrated-circuit logic families (DTL, TTL, etc.) and their design theory. MOSFET circuits and their design theory. Flip-flop, registers and counters. Arithmetic operations. Semi-conductor memories. Analog switches. Analog-to-digital conversion. Prerequisites: EE 202, 315. (Same as EE 516.)

439 Digital Electronics Laboratory 1 hr.
Experiments and reports related to logic circuit realization of digital hardware. RTL, DI, TT, ECI families for combinational and sequential switching circuits. Must parallel EE 436. (Same as EE 519.)

452 Optical Systems Design 3 hrs.
Introduction to the geometrical design and analysis of optical systems, and to the design principles of lens systems. Prerequisite: EE 461. (Same as EE 532.)

461 Optical Systems Design 3 hrs.
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. Prerequisite: OPT 342. (Same as OPT 441, PH 441, and OPE 441.) Fall.

462 Interference and Diffraction 3 hrs.

INDUSTRIAL AND SYSTEMS ENGINEERING

Degree: Bachelor of Science in Engineering

Professors Schroer (Chair), Wyskida; Professor Emeritus Brown; Associate Professors Tytula, Walker; Adjunct Associate Professor Dorsett; Assistant Professors Farrington, Interrante, Messimer; Adjunct Assistant Professors Lawler, Safie, Thomas.

Industrial and Systems Engineering Option
Industrial and systems engineering is concerned primarily with integration of people, machines and materials and operating procedures into a functional and economic whole called a system. Thus the specialization includes consideration not only of the usual engineering science, but also requires some knowledge of social, psychological, and human values to identify and satisfy needs of ultimate users of engineering systems.

Additional Basic Sciences

<table>
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<tr>
<th>Science Elective</th>
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Industrial Engineering Option

<table>
<thead>
<tr>
<th>ME 198 - Engineering Graphics</th>
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<tbody>
<tr>
<td>ISE 326 - Production and Operation Systems I</td>
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<tr>
<td>ISE 327 - Production and Operation Systems II</td>
<td>3</td>
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<tr>
<td>ME 370 - Mechanics of Materials</td>
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<tr>
<td>ISE/ME 378 - Materials and Manufacturing Process</td>
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<tr>
<td>ISE 390 - Probability and Engineering Statistics I</td>
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</table>
Suggested Schedule of Courses for Full-time Industrial and Systems Engineering Students

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<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tbody>
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<td>MA 153</td>
<td>MA 154</td>
<td>MA 233</td>
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<td>HU/SS*</td>
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<td>ECN 239</td>
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<td>CH 121,125</td>
<td>PH 111,114</td>
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<td>EE 197</td>
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<td>MA 251</td>
<td>MA 244</td>
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<td>ME 294</td>
<td>ME 271</td>
<td>ME 370</td>
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<td>ISE 326</td>
<td>ISE 321</td>
<td>ISE 390</td>
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<td>ISE 198</td>
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<td>EE 300</td>
<td>EE 311</td>
<td>ISE 327</td>
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<td>EH 301</td>
<td>ISE/ME 378</td>
<td>Engr Elect</td>
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<td>ME 362</td>
<td>ISE 490</td>
<td>EE 301</td>
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<td>ME 493</td>
<td>Sci Elect</td>
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<tr>
<td>ISE 424</td>
<td>ISE 429</td>
<td>Engr Elect</td>
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<td>ISE 428</td>
<td>ISE 447</td>
<td>ISE 423</td>
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<td>ISE 430</td>
<td>HU/SS*</td>
<td>ISE 427</td>
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<td>HU/SS*</td>
<td>PH 392</td>
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</table>

*Hu/SS: 12 hours in humanities and social sciences.

Undergraduate Industrial & Systems Engineering Courses (ISE)

321 Engineering Economy 3 hrs.
Economic evaluation of engineering alternatives. Interest, depreciation, time-value of investments, learning curves, income tax break-even and minimum-cost analysis, and replacement analysis. Prerequisite: ECN 239, MA 154. Not open to freshmen.

326 Production and Operation Systems I 3 hrs.
Quantitative methods used in planning, analysis, design, and control of production systems. Prerequisites: MA 154, EE 197.

327 Production and Operation Systems II 3 hrs.
Continuation of ISE 326 with additional quantitative methods for analysis, designing, and control of productive systems. Prerequisites: ISE 326, ISE 390.
Materials and Manufacturing Processes 3 hrs.
Manufacturing processes. Technical and economic feasibility of different processes. Control by mechanical and metallurgical means of properties of both ferrous and nonferrous materials. Manufacturing equipment, tooling, and process design. Field trip included. Prerequisites: ME/CE 362, 370. (Same as ME/CE 378).

Probability and Engineering Statistics I 3 hrs.
Engineering uses of probability theory, discrete and continuous probability distributions including the binomial, Poisson, hypergeometric, normal, uniform, gamma, beta, lognormal, exponential, and Weibull distributions. Applications of statistical sampling, estimation, and hypothesis testing of means, variances, and proportions. Prerequisite or parallel: MA 251.

Measurement and Instrumentation in Industrial Processes 3 hrs.
Principles and methods of measurement used in the collection of operating information from industrial processes. Laboratory work includes the use of currently available transducers. Prerequisites: EE 301, 311. (Same as ISE 521.)

Logistics Planning and Control 3 hrs.
Basic nature of logistics systems. Quantitative analysis of two networks and their interaction, the logical network for project-planning and control, and the physical distribution network, charting, milestone method, lines of balance, PERT-CPM, resource allocation and leveling, and maximum flow and minimum cost algorithms. Prerequisite: ISE 390. (Same as ISE 522.)

Statistical Quality Control 3 hrs.
Statistical theory and techniques to control quality of manufactured products. Prerequisite: ISE 390. (Same as ISE 523.)

Introduction to Ergonomics: Work Development 3 hrs.
Philosophy, methodology, and techniques related to providing optimal match between job requirements and worker skills. Intensive use of actual industrial requirements and experience in practical applications. Prerequisites: ISE 390, 327 or graduate standing. (Same as ISE 524.)

Metal Processing and Metrology 3 hrs.
Theory and practice of metal removal, including cutting mechanics, interactions of cutting tools and materials; thermal considerations and probabilistic nature of tool life; effect of tool design on process behavior and optimization. Includes laboratory. Prerequisites: ME/CE 370 and senior standing.

Design and Analysis of Experiments 3 hrs.
Advanced topics in statistical experiments with emphasis on the design aspect. Confounding, fractional replication, factorial and nested designs. Prerequisite: ISE 490. (Same as ISE 526.)

Management Systems Analysis 3 hrs.
Formal organization structures and functions. Analysis of informal organization function within formal organizations. Techniques for making decisions within formal organizations, together with ethical constraints. Prerequisite: ISE 390.

Systems Analysis and Design I 3 hrs.
Philosophy and methods of industrial and nonindustrial systems analysis and design. Methods of systems definition, analysis, simplification, evaluation, and optimization. Design project required. Prerequisites: ISE 327, 490; ME 493 and senior standing.

Systems Analysis and Design II 3 hrs.
Continuation of design project begun in ISE 428. Prerequisite: ISE 428.

Modern Manufacturing/Production Systems 3 hrs.
Overview of modern manufacturing and production systems, including principles, theory and practical applications of integrated manufacturing systems with and with-
Microprocessor Applications in Manufacturing 3 hrs.
The use of minicomputers, microprocessors, and programmable controllers to control manufacturing processes with extensions into adaptive control. Real systems are modeled in the laboratory using concepts of physical systems simulation. Prerequisite: 421 (Same as ISE 531.)

Selected Topics in ISE Credit to be arranged

Introduction to Digital Simulation 3 hrs.
Philosophy and elements of digital simulation. Review of queueing models and stochastic process models; discrete-event simulation with emphasis on analysis of systems and models. Prerequisites: EE 197, ISE 390. (Same as ISE 547.)

Intelligent Systems Design I 3 hrs.
Systems overview of artificial intelligence concepts and related engineering applications, with emphasis on modeling and representation of physical systems. Topics: knowledge acquisition/representation, reasoning tasks, networks in AI production systems versus deductive retrievers, object oriented programming, machine learning, qualitative reasoning and solidification/verification. Prerequisite: ISE 390

Systems Simulation Laboratory I - GPSS 2 hrs.
Modeling and digital simulation of systems using GPSS. Prerequisite: EE 197. (Same as ISE 571.)

Systems Simulation Laboratory II - SIMAN 2 hrs.
Modeling and digital simulation of systems using SIMAN. Prerequisite: EE 197. (Same as ISE 571.)

Systems Simulation Laboratory III - DYNAMO 2 hrs.
Modeling and simulation of dynamic feedback systems. Prerequisite: EE 197. (Same as ISE 573.)

Probability and Engineering Statistics II 3 hrs.
Continuation of ISE 390 with regression analysis, analysis of variance, and nonparametric statistics. Design of engineering experiments, quality control, and computer solution of large-scale problems. Prerequisite: ISE 390.

MECHANICAL AND AEROSPACE ENGINEERING

Degree: Bachelor of Science in Engineering

Distinguished Professors Chung, Wu; Professors Coleman, Cost, Gilbert, Guinn, Harwell, Hawk, Hung, Karr (chair), Russell, Shih, Wallace, Wessling; Associate Professor Emeritus Thompson; Assistant Professors Bower, Frederick, Musielak,

Mechanical Engineering Option

Mechanical engineering is a broad field that traditionally comprises three primary subfields: energy, mechanisms and machinery, and manufacturing. The work done by mechanical engineers includes the design, construction, and use of systems for the conversion of energy available from natural sources (water, fossil fuels, nuclear fuels, solar radiation) to other forms of useful energy (for transportation, heat, light, power); design and production of machines to lighten the burden of servile human work and to do work otherwise beyond human capability; processing of materials into useful products; and creative planning, development, and operation of systems using energy, machines, and resources.
Aerospace engineering is concerned with the engineering aspects of the design, performance, safety, and economics of aircraft, spacecraft, missiles and rockets. Aerospace engineering courses are offered at both the undergraduate and graduate level to allow students the option of applying these courses to their programs in mechanical engineering or other engineering or science programs. These courses can be used as technical electives in the undergraduate program. In the future, it is expected that a full option in aerospace engineering will be available.

### Additional Basic Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
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<tr>
<td>Chemistry - CH 123, 126</td>
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### Mechanical Engineering Option

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<tr>
<th>Course</th>
<th>Semester Hours</th>
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<tr>
<td>ME 198 - Engineering Graphics</td>
<td>2</td>
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<tr>
<td>ME 341 - Thermodynamics I</td>
<td>3</td>
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<tr>
<td>ME 342 - Thermodynamics II</td>
<td>3</td>
</tr>
<tr>
<td>ME/CHE 352 - Fluid Mechanics I</td>
<td>3</td>
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<tr>
<td>ME 364 - Kinematics and Dynamics of Machines</td>
<td>4</td>
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<tr>
<td>ME/CHE 370 - Mechanics of Materials</td>
<td>4</td>
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<tr>
<td>ME/ISE 378 - Materials and Manufacturing Processes</td>
<td>3</td>
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<tr>
<td>ME 396 - Numerical Methods and Computations</td>
<td>2</td>
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<tr>
<td>ME/CHE 442 - Introduction to Heat and Mass Transfer</td>
<td>4</td>
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<tr>
<td>ME 446 - Design of Thermal Systems</td>
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<tr>
<td>ME 447 - Energy Conversion and Power Generation I</td>
<td>3</td>
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<tr>
<td>ME 454 - Fluid Mechanics II</td>
<td>3</td>
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<td>ME 465 - Engineering Design</td>
<td>3</td>
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<tr>
<td>ME 466 - Mechanics and Design of Machine Elements</td>
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<tr>
<td>ME 488 - Analysis of Engineering Systems</td>
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*Technical Electives: 7

*ME courses at level 300 or above or other upper level courses approved by the Department of Mechanical Engineering.

Students applying for graduation in the mechanical engineering option must show evidence of having taken the Fundamentals of Engineering (FE) Examination. The exam is offered by the State of Alabama board of Registration for Professional Engineers, 750 Washington Ave., Montgomery, AL. 36130-1001. Phone: (205) 261-5568. Contact the College of Engineering for further information.

### Suggested Schedule of Courses for Full-time Mechanical Engineering Students

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<th>Fall</th>
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<td>CH 121,125</td>
<td>4 CH 123,126</td>
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<tr>
<td>ME 198</td>
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<td>ME 341</td>
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<td>ME/CHE 370</td>
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Total: 123
Undergraduate Mechanical Engineering Courses (ME)

**Engineering Graphics**  
198  
Principles of engineering graphical expression: sketching, instrument drawing, orthographic projections. Descriptive geometry problems involving locations, relationships of points, lines, areas, and bodies, and intersection of surfaces. Dimensioning for production, pictorial design, vector geometry, and monographs.  
Prerequisite: MA 119.

**Statics**  
271  
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. Prerequisites or parallel MA 251, PH 112. (Same as CE 271).

**Nature and Properties of Materials**  
294  
Structure of matter, basic concepts of phase transformation, mechanical, electrical, magnetic, and thermal properties, and corrosion. Basic properties of metals, plastics, elastomers, and ceramics with emphasis on methods of changing properties. Laboratory included. Typical experiments include microstructure analysis, hardness testing, mechanical-properties testing, equilibrium-phase diagrams, corrosion, creep behavior, and semiconductor analysis. Prerequisites: CH 121, PH 112. (Same as CHE 294).

**Thermodynamics I**  
341  
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. Prerequisites: MA 251, ME/CHE 294 (or parallel).

**Thermodynamics II**  
342  
Continuation of ME 341. Thermodynamic cycles, thermodynamic relations among properties, chemical reactions, and phase and chemical equilibrium. Prerequisite: ME CHE 341.

**Fluid Mechanics I**  
352  
Properties of fluids and fundamental principles governing fluid motion, including fluid statics, conservation of mass, momentum and energy with applications to pipe, and channel flows of incompressible fluids. Laboratory included. Prerequisites: ME 341, ME/CE 362, MA 324. (Same as CHE 362).

**Dynamics**  
362  
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 plane motion, relative motion in rotating coordinates, and gyroscopic motion. Prerequisite: ME/CE 271 (Same as CE 362).

**Kinematics and Dynamics of Machines**  
364  
Kinematics and dynamics of planar machinery. Principles of mechanisms, design of cams, fundamentals of gears and epicyclic gear trains, methods of determination of velocity and acceleration in mechanisms. Inertia forces in machines, balancing of rotating masses and reciprocating masses, and vibration analysis. Prerequisite: ME/CE 362.

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Total Hours 133

*Hu/SS: 12 hours in humanities/social sciences*
370 Mechanics of Materials 4 hrs.
Topics include: theory of stress and 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. Laboratory includes: determination of selected properties of various engineering materials, experimental verification of theories presented, use of strain measuring devices, test procedures, instrumentation, and interpretation of results. Prerequisites: ME/CE 271, ME/CHE 294. (Same as CE 370).

378 Materials and Manufacturing Processes 3 hrs.
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. Prerequisite: ME/CE 370. (Same as ISE 378.)

394 Introduction to CAD/CAM 3 hrs.
Introduction to computer aided graphics. Representation of systems and bodies using computers, graphic file organization. Elements of computer graphics, manipulation of elements, rotation of views, and use of Intergraph CAD systems. Laboratory projects. Prerequisite: ME 198, ME/CE 271.

396 Numerical Methods and Computation 2 hrs.
Numerical techniques associated with complex problems. Evaluation of functions, finding roots of equations, solution of simultaneous algebraic and differential equations. Use of computers. Prerequisites: EE 197, MA 244, and prerequisite or parallel MA 324.

398 Selected Topics in Mechanical Engineering Credit to be arranged.
Prerequisite: permission of instructor.

442 Introduction to Heat and Mass Transfer 4 hrs.
Principles of heat and mass transfer; application of principles to problems in conductive, convective, and radiative-heat transfer and mass transfer; laminar and turbulent flow processes; boiling and condensation; heat exchangers. One credit hour laboratory included. Prerequisites: ME 341, ME/CHE 352, 396, MA 324. (Same as CHE 442).

444 Analysis and Design of HVAC Systems 3 hrs.
Analysis and design of heating, ventilation, and air-conditioning (HVAC) systems. Design requirements for human comfort, exterior weather conditions, and energy conservation. Calculation of heating and cooling loads for residential and commercial buildings, air and liquid distribution systems, selection and specification of system components, energy recovery and system efficiency, and commercially available systems. Prerequisites: ME 342, ME/CHE 442. (Same as ME 544.)

446 Design of Thermal Systems 3 hrs.
Principles of 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. Prerequisites: ME 342, ME/CHE 442; ME 493 recommended.

447 Energy Conversion and Power Generation I 3 hrs.
Application of principles of thermodynamics and fluid mechanics and economics to analysis and design of conventional hydro and steam power plants. Energy sources and end uses, fossil fuels, combustion equipment, steam generators, and pollution control devices. Hydro, steam, and wind turbines. Prerequisites: ME/CHE 352, 442, ME 454, ME 446 recommended. (Same as ME 547)
451 Atmospheric Fluid Dynamics 3 hrs.
Fluid dynamics in the atmosphere. Coriolis acceleration, scale analysis, and appropriate approximations of the complete governing equations. Numerical analysis and interpretation of weather phenomena. Prerequisites: MA 324, ME 341, ME/CHE 352 or equivalent. (Same as ME 551, ES 551)

454 Fluid Mechanics II 3 hrs.
Continuation of ME 352 - differential form of basic equations, dimensional analysis, boundary layers, one-dimensional compressible flow, potential flow, turbomachinery. Prerequisite: ME/CHE 352.

459 Selected Topics in Engineering Credit to be arranged.

461 Vibrations of Elastic Systems 3 hrs.
Formulation of the equations of motion of discrete and continuous systems, analytical and numerical methods of solution, eigenvalue problems and dynamic response. Prerequisite: ME 488. (Same as ME 561 and CE 461/561)

465 Mechanical Engineering Design 3 hrs.
Senior design project. Prerequisites: ME 493, senior standing, and permission of instructor.

466 Mechanics and Design of Machine Elements 3 hrs.
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. Prerequisites: ME 198, 364, ME/CE 370.

470 Mechanics of Materials II 3 hrs.

474 Applied Mechanics of Solids 3 hrs.
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. Prerequisite: ME/CE 370. (Same as ME 574 and CE 474/574).

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. Prerequisites: ME/CE 370 and junior standing. (Same as ME 577 and CE 477/577).

478 Matrix Methods in Structural Mechanics 3 hrs.
Matrix application to formulation and solution of linear problems in structural mechanics. Stresses, vibrations, and stability of engineering structures. Prerequisite: CE 381. (Same as ME 578 and CE 478/578).

480 Aircraft Stability and Control 3 hrs.
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. Prerequisites: ME 454, 488. (Same as ME 580.)

485 Numerical Methods and Computation II 3 hrs.
Advanced topics in numerical methods and computation including Gaussian quadrature; interpolation, integration and differentiation using cubic splines; eigenvalue and eigenvector analysis of large systems; round-off error analysis; stability and convergence analysis of iterative methods. Prerequisite: ME 396. (Same as ME 585.)
Numerical Engineering Analysis 4 hrs.
Finite elements and finite differences in solving various engineering problems. Numerical applications to fluid mechanics, heat transfer, structural mechanics, and machine design. Prerequisite: ME 396. (Same as ME 586.)

Analysis of Engineering Systems 3 hrs.
Mathematical modeling of physical systems and determining their dynamic response. Mechanical, electrical, electromechanical, heat transfer, fluid-mechanical, and other engineering problems. Prerequisite: senior standing.

Computer-Aided Engineering 4 hrs.
Application of computer methods in the analysis and design of structural, thermal, and dynamical systems. Uses 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. Prerequisite: ME 396.

Introduction to Engineering Design 2 hrs.
Application of basic design principles and concepts. Design methodology, decision making, creativity, product liability, human factors, patents, and others. Team design projects. Prerequisites: ISE 321, ME/CE 362, EE 300.

Selected Topics in ME Credit to be arranged

OPTICAL ENGINEERING

Degree: Bachelor of Science in Engineering

The Department of Electrical and Computer Engineering administers the degree option in optical engineering. This program prepares students for careers in opto-electronics, including the design and application of systems for optical fiber communications, optical instrumentation, holography, image forming and processing, lasers and optical detection, as well as areas such as optical testing. Two routes are available, one based on the electrical engineering program, and one based on the mechanical engineering program. These routes are described below. The electrical engineering route (A) is designed to fulfill the criteria for ABET accreditation in electrical engineering.

Optical Engineering Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
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<tr>
<td>English - EH 301</td>
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<td>Mathematics - MA 153,154,233,244,251,324</td>
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<td>Humanities &amp; Social Sciences</td>
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<td>Basic Sciences - CH 121,125, PH 111,112,113,116</td>
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<td>Engineering Core - EE 197,300,301,311, ISE 321, ME 271,294,362,493</td>
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<td>Optical Engineering Core - OPT 341,342, EE 313, 307,407, OPE 453,455,459</td>
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<tr>
<td>Optical Science Electives - OPT 411,445,446,447 OPE 441,442</td>
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Route A (EE)
EE 202 3
EE 305 1
EE 315 3
EE 382 3
EE 383/384 4
EE 420 3
EE 426 3

Route B (ME)
ME 342 3
ME 352 3
ME 364 4
ME 370 4
ME 442 4
ME 454 3
ME 488 3
Suggested Schedule of Courses for Full-time Optical Engineering Students (Route A)

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<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tr>
<td>HU/SS</td>
<td>MA 154 3</td>
<td>MA 233 3</td>
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<td>MA 153</td>
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<td>HU/SS</td>
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<td>PH 113,116</td>
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<tr>
<td>MA 251</td>
<td>MA 244 3</td>
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<td>EE 307</td>
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<tr>
<td>EH 301</td>
<td>OPE 451 3</td>
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<tr>
<td>ME 493</td>
<td>EE 383/384 4</td>
<td>OPE 459 3</td>
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<tr>
<td>EE 420</td>
<td>EE 426 3</td>
<td>OPE 456 2</td>
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<tr>
<td>OPE 454</td>
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<td>Elect 3</td>
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<td>ME 362</td>
<td>PHL 392 3</td>
<td>Elect 3</td>
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<tr>
<td>Total Hours</td>
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Suggested Schedule of Courses for Full-time Optical Engineering Students (Route B)

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<th>Fall</th>
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<tbody>
<tr>
<td>MA 153</td>
<td>MA 154 3</td>
<td>MA 233 3</td>
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<tr>
<td>CH 121/125</td>
<td>EE 197 3</td>
<td>PH 112,115 4</td>
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<td>PH 111/114 4</td>
<td>HU/SS 3</td>
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<td>HU/SS 3</td>
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<td>MA 251</td>
<td>MA 244 3</td>
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<td>PH 113/116</td>
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<td>EH 301</td>
<td>EE 313 3</td>
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<td>136</td>
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</tbody>
</table>
Undergraduate Optical Engineering Courses (OPE)

441  Optical Systems Design  3 hrs.
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. Prerequisite: OPT 342. (Same as EE 461, PH 441, and OPT 441.) Fall.

442  Interference and Diffraction  3 hrs.

451  Optoelectronics  3 hrs.
Review of polarized light and 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. Prerequisite: EE 315. (Same as OPT 444)

453  Laser Systems  3 hrs.
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. Prerequisite: EE 407.

454  Optical Fiber Communication  3 hrs.
Introduction to optical fibers and their transmission characteristics, optical fiber measurements, sources and detectors, noise considerations for digital and analog communications, optical fiber systems. Prerequisite: EE 407 or PH 432. (Same as EE 534)

455  Optical Engineering Laboratory  2 hrs.
Introduction to physical optics phenomena. Young’s double slit experiment, Lloyd’s mirror, Fresnel birefringence, Newton’s rings, intensity distribution in fringe systems, Michelson interferometer, Fabry-Perot interferometer, Fresnel and Fraunhofer diffraction, diffraction by circular, rectangular and multiple openings, diffraction gratings, curve generating, polishing and testing optical surfaces with emphasis on design aspects of these systems. Prerequisites: PH 116, OPT 342 and EE 382 or OPT 442. (Same as OPT 412, OPE 535)

456  Photonics Laboratory  2 hrs.
Intensive laboratory work with experiments and design projects on lasers, optical fibers, spatial light modulators, image processing, spatial filtering, optical fiber communication and optical computing. Prerequisites: OPE 453, 454.

459  Optical Engineering Design  3 hrs.
Senior design project. Analysis, design and testing of optical and optoelectronic systems. Prerequisite: Senior
The College of Liberal Arts provides educational experiences and programs of study in the major fields of the arts, humanities, and social sciences. These programs are designed to contribute to the personal and intellectual development of students and to assist them in preparing for successful careers. These programs emphasize the development of communication skills, patterns of critical thinking, and problem solving capabilities. They contribute to the development of an understanding of the relationships among people, and between human beings and the elements of the physical and biological world.

The arts and the humanities, encompassing art, history, languages and literatures, music, and philosophy, lead to an understanding and appreciation of life as humankind has perceived it and as individuals have lived it. This study leads to a heightened critical faculty and a greater ability to use, evaluate and appreciate values and ideas; to the ability to be more effective in utilizing language; and to the cultivation of taste. The study of the arts and the humanities is essential to a broad and sensitive awareness of humankind as it has been, is, and aspires to be.

The social sciences encompass the knowledge that deals with the behavior of humankind and the culture it has created, knowledge that becomes more necessary as the world grows more complex and interrelated. Social scientists perform a dual function, assembling and ordering complex systems of technical knowledge related to human relationships and providing a continual appraisal of the value systems in our society. The social science programs at UAH—history, political science, psychology, and sociology—are designed to prepare the student to value and perform both of these roles. Since these disciplines are concerned with a social milieu that is both possible and desirable, the approach involves both the understanding and use of the scientific method and an appreciation of, and a sensitivity to, questions of values.

The College of Liberal Arts offers courses of study that provide its students, and those in the sciences, the preparation that is necessary to gain teacher certification. These programs involve both the in-depth study of at least one field in the liberal arts and sciences and the intensive professional training in the field of education that are needed for the teacher to meet the challenges of teaching in the modern world.

Throughout its curriculum, the College of Liberal Arts attempts to utilize and build upon the richness and diversity of our tradition and diverse talents of our faculty in preparing persons to be secure, productive, and successful in a free and humane society in a high technology age. Its goals are to aid in the development of more sensitive and successful scientists, more creative and powerful artists, and more disciplined students of the humanities. In sum, it seeks to contribute to the individual’s development as a well-rounded and capable person and professional who is prepared to undertake successfully, and to provide leadership in effectively confronting, the many challenges of life.
Undergraduate Degrees and Study

The College of Liberal Arts awards a Bachelor of Arts degree. Each student must file an official program of study no later than the close of the sophomore year. This program of study must include a major and a minor or supporting cognate studies. The major must be chosen from the following disciplines: art, communication arts, education, English, foreign languages and international trade, French, German, history, music, philosophy, political science, psychology, Slavic area studies, sociology, or Spanish. Besides these majors, courses are offered in linguistics, physical education, and Russian. The major will consist of a minimum of 30 semester hours in a program of study in a single department with at least 21 of these hours at the 300 level or above.

The supporting studies must include one of the following variations:

1. A minor drawn from any discipline with a minimum of 12 hours at the 300 level or above.
2. An approved cognate area of closely related courses approved by the major department with 12 semester hours at the 300 level or above.

(See individual department programs for specific requirements of each minor, or consult with an advisor in the major department for the development of an approved cognate area.)

Any minor chosen by a student is subject to approval by the department offering the minor. Any area of cognate studies chosen by a student is subject to approval of the chairman of the student’s major department. All programs of study are subject to approval by the dean of the College.

Graduate Degrees and Study

Graduate study in the College of Liberal Arts brings together faculty and advanced students to share the excitement of creative learning. All degree candidates plan a program of study with faculty members who share the student’s intellectual interests. Within the framework of the requirements established by the Department and the School of Graduate Studies, students design, in consultation with a faculty advisor, a graduate program fitted to their particular interests and needs.

The College of Liberal Arts offers programs of study leading to the Master of Arts Degree with concentrations in English, History, Psychology, and Public Affairs. Class “A” teacher certification is available with concentrations in each of the areas of the arts and sciences in which the masters degree is awarded by the institution. Certification may be achieved through either traditional or non-traditional “fifth year” approaches.

Interdisciplinary Courses

The College of Liberal Arts offers an interdisciplinary course in statistics which is required in all social science majors and satisfies the statistics requirement in the College of Nursing.

Arts, Humanities, and Social Sciences (AHS)

300 Statistical Analysis 4 hrs.
Collection, classification, and presentation of social science data, measures of central tendency and dispersion, introduction to probability distribution and sampling theory, confidence limits and tests of significance, chi-square and ‘t’ distribution, introduction to regression and ANOVA. Includes laboratory. Prerequisite: MA 105 or 119. Lab Fee: Level 4.
Art and Art History Department

Professor Crouse; Associate Professor Dasher (Chair); Assistant Professors Counselman, Farr, Marchlinski, Stewart.

The Department of Art and Art History offers courses in the studio arts and art history leading to a Bachelor of Arts major, a minor, or as part of a program of cognate studies in art or art history. Three basic programs of study have been established for students majoring in art. They are the studio discipline, the art history discipline, and the studio discipline with teacher certification. The studio discipline allows a student to specialize at the upper division in drawing/painting, graphic design, photography, printmaking, or sculpture.

Most art courses do not require any previous experience and any student enrolled at the university is encouraged to consider taking art courses as a major, a minor, or simply as electives for personal enrichment through involvement with the visual arts.

Transfer students must submit a portfolio of representative samples of their work for review by the art faculty before registration. Credit for equivalent coursework and advanced placement in art courses will be determined by the art faculty. Art majors transferring to UAH must complete at least 12 semester hours of art courses at the 300 level or above. Art minors transferring in must take at least 6 semester hours of art courses at the 300 level or above.

I. The Studio Discipline: (Drawing, Graphic Design, Painting, Photography, Printmaking, Sculpture)

A. Lower Division Requirements (24 hours)

1. Art Studio Requirements

ARS 120-Two-Dimensional Design 3 hrs.
ARS 121-Color in Design 3 hrs.
ARS 140-Three-Dimensional Design 3 hrs.
ARS 160-Introduction to Drawing 3 hrs.
ARS 260-Intermediate Drawing 3 hrs.

2. Art History Courses

ARH 100-Art History Survey: Ancient to Medieval 3 hrs.
ARH 101-Art History Survey: Renaissance to Modern 3 hrs.
ARH 201-Contemporary Art and Issues 3 hrs.

Note: There are no prerequisites for ARH 100 and 101, ARS 120, 121, 140, and 160 which introduce the student to basic concepts and skills in the visual arts.

B. Upper Division Requirements (27 hours)

Seven courses at the 300 level and two courses at the 400 level. A student choosing to specialize in a specific studio area may take up to six courses in it.

Graphic Design-ARS 330, 331, 332, 333, 430, 431
Painting/Drawing-ARS 375, 376, 377, 360, 475, 476, 477
Printmaking-ARS 380, 381, 382, 383, 480, 481, 483
Photography-ARS 350, 352, 353, 452, 453
Sculpture-ARS 340, 341, 342, 346, 440, 441, 442
Other-ARS 393, 493, 495
To fulfill upper division elective studio requirements, a student may take two art studio courses at Alabama A&M. These courses must be selected from ART 305 Beginning Ceramics; ART 306 Advanced Ceramics; ART 307 Beginning Jewelry; and ART 308, Advanced Jewelry.

Note: 400-level courses are to be taken one at a time and only after successful completion of seven 300-level courses.

Graphic design courses should be taken in sequence. Exceptions must receive approval of the instructor.

PORTFOLIO REVIEW: Studio majors must submit a portfolio of their work for review by an art faculty committee before undertaking any 400-level courses. No other studio courses can be taken while enrolled in a 400-level sequence.

C. Total Number of Hours
51 semester hours within the Department of Art and Art History
48 hours if ARH 100 or 101 is applied to the fine arts GER
42 hours when ARH 100, 101 and 201 are part of an art history minor
45 hours if ARH 100 and 101 are included in an art history cognate

II. The Art History Discipline
A. Lower Division Requirements (18 hours)
   1. Art History Courses
      ARH 100-Art History Survey: Ancient to Medieval 3 hrs.
      ARH 101-Art History Survey: Renaissance to Modern 3 hrs.
      ARH 201-Contemporary Art and Issues 3 hrs.
   2. Art Studio Courses
      Any three 100-level foundation courses 9 hrs.

B. Upper Division Requirements (24 hours)
   1. Art History Courses
      Seven courses at the 300-level or above. 21 hrs.
   2. Art Studio Courses
      One 300-level course, selected in consultation with advisor 3 hrs.

C. Total Number of Hours
42 semester hours with the Department of Art and Art History
39 hours if ARH 100 or 101 is applied to the fine arts GER

III. Studio Discipline with Teacher Certification
The program for teacher certification, available to students majoring in art, fulfills the certification requirements for teaching art in Alabama’s nursery through secondary schools.

A. Lower Division Requirements (24 hours)
   1. Art Studio Courses
      ARS 120-Two-Dimensional Design 3 hrs.
      ARS 121-Color in Design 3 hrs.
      ARS 140-Three-Dimensional Design 3 hrs.
      ARS 160-Introduction to Drawing 3 hrs.
      ARS 260-Intermediate Drawing 3 hrs.
2. Art History Courses
   ARH 100 - Art History Survey: Ancient to Medieval 3 hrs.
   ARH 101 - Art History Survey: Renaissance to Modern 3 hrs.
   ARH 201 - Contemporary Art and Issues 3 hrs.

B. Upper Division Requirements (27 hours)
1. Art Studio Courses
   Choose two:
   - Painting/Drawing - ARS 375, 376, 377, 3760 6 hrs.
   - Printmaking - ARS 380, 381, 382, 383 6 hrs.
   - Sculpture - ARS 340, 341, 342, 346 6 hrs.
   Photography - ARS 350 3 hrs.
2. Art History Courses
   One 300-level history of art before 1800 3 hrs.
   One 300-level history of art after 1800 3 hrs.

C. Total Number of Hours
   51 semester hours with the Department of Art and Art History

Note: General education requirements for certification differ from those of the preceding programs. Students should consult the catalog description listed under the Education Department for course requirements and other relevant program information.

Minors and Cognate Studies Programs
1. Art History Minor
   21 semester hours within the Department of Art and Art History
   18 hours if ARH 100 or 101 is applied to the fine arts GER
   ARH 100 and ARH 101 - Art History Surveys 3 hrs.
   ARH 201 - Contemporary Art and Issues 3 hrs.
   One 300-level history of art before 1800 3 hrs.
   One 300-level history of art after 1800 3 hrs.
   Two 300-level or above art history electives 6 hrs.

   Note: Studio discipline majors are strongly encouraged to pursue a minor in art history which will give them a better understanding of the visual arts tradition.

2. Art History Cognate
   21 semester hours within the Department of Art and Art History and related discipline
   18 hours if ARH 100 or 101 is applied to the fine arts GER
   ARH 100 and 101 - Art History Surveys 6 hrs.
   Three 300-level or above history of art electives 9 hrs.
   Two 300-level or above courses in a related discipline 6 hrs.

3. Studio Art Minor
   21 semester hours within the Department of Art and Art History
   18 hours if ARH 100 or 101 is applied to the fine arts GER.
   One 100-level ARH survey 3 hrs.
   Two 100-level studio foundation courses 6 hrs.
   Four 300-level studio courses 12 hrs.
Art for Second Area of Study (with Elementary Education)
21 semester hours within the Department of Art and Art History
Choose three:
ARS 120, 121, 140, 160, 260 - Studio foundation courses 9 hrs.
Choose four:
ARS 375, 376 - Painting
ARS 380, 382 - Printmaking
ARS 340-346 - Sculpture
ARS 350 - Photography 12 hrs.

Note: ARH 100 and 101 should be taken to fulfill the general studies requirement for the elementary education program.

Art Studio (ARS)

Lower Division Courses
Lower division studio courses stress the development of visual and manual skills, problem-solving abilities, critical thinking, and an awareness of the tools and materials used in the making of art.

120 Two-Dimensional Form in Design 3 hrs.
Introduction to the elements and principles of two-dimensional design. Studio work exploring form and intuitive theories of composition. Lab Fee: Level 3.

121 Color in Design 3 hrs.
Physiological, psychological, and physical properties of color with studio work in subjective and objective uses of color. Lab Fee: Level 3.

140 Three-Dimensional Design 3 hrs.
Introduction to three-dimensional design through the investigation of a wide range of forms and processes. Problem-solving assignments address a variety of design approaches, while considering the traditional and non-traditional roles of materials and the proper use of tools. Lab Fee: Level 3.

160 Introduction to Drawing 3 hrs.
Introduction to the principles, tools, materials, techniques, and concepts of drawing. Through exercises in rendering from life, studies in perspective, and problem-solving, students develop strong visual skills, consider the role of aesthetics, and begin to explore a variety of means for artistic expression. Lab Fee: Level 3.

215 Art for Elementary Teachers 3 hrs.
Methods and media presented by lecture, demonstration, discussion, reading, and studio experience for elementary school teachers. Does not satisfy departmental core requirements. Lab Fee: Level 3.

260 Intermediate Drawing 3 hrs.
Further development of drawing skills and individual expression through the study and practice of selected drawing approaches. Lab Fee: Level 3. Prerequisites: ARS 120, 121, and 160.

Upper Division Courses
Upper division studio courses explore the specific nature of each area of specialization. Students are guided in their development of artistic facility and of a vocabulary of visual symbols for personal expression. They learn that the making of art is not solely the exercise of artistic skill, but that it requires the employment of reasoning and intellectual ability in entirely new and uniquely personal ways.
Graphic Design I 3 hrs.
Introduction to the tools, techniques, theories, and practices of graphic design. Emphasis is placed on visual and conceptual problem-solving from a formalized and process-oriented approach. Prerequisites: All lower division foundation requirements or approval of instructor. Lab Fee: Level 3.

Graphic Design II 3 hrs.
Exploration of basic advertising layout and production processes. Individual projects enhance technical skill and visual problem-solving. Prerequisite: ARS 330 or approval of instructor. Lab Fee: Level 3.

Graphic Design III 3 hrs.
Development of a corporate identity system, from concept to finished product. Special emphasis is placed on craftsmanship and professional presentation skills. Prerequisite: ARS 331 or approval of instructor. Lab Fee: Level 3.

Graphic Design IV 3 hrs.
Development and application of typographic skills, experimental applications of typography leading to a comprehensive understanding of modern typographic design. Prerequisite: ARS 332 or approval of instructor. Lab Fee: Level 3.

Sculpture I: Assemblage 3 hrs.
Exploration of a variety of assemblage processes including wood construction and metal fabrication. Emphasis is placed on idea development and investigating a wide range of forms and materials. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

Sculpture II: Carving 3 hrs.
Stone and wood carving are investigated with emphasis placed on developing the ability to see and release hidden form and on the unique relationship formed between maker and material. Prerequisite: None. Art major and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

Sculpture III: Casting 3 hrs.
Investigation of foundry processes and materials involved in mold making and lost-wax bronze casting, metal chasing, and patination. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

Sculpture IV: Figure Modeling 3 hrs.
Human form through direct clay modeling from life including anatomical studies, armature construction, mold making and casting. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

Basic Photography 3 hrs.
Understanding and practice of photography through its use as a fine art medium. Introduction to camera use and darkroom techniques. Students will be required to provide their own 35mm. camera. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

Non-Silver Photography 3 hrs.
Investigation and use of alternative processes such as gum-bichromate, cyanotype, xerography, and related media to produce works of photographic art. Prerequisite: ARS 350 or approval of instructor. Lab Fee: Level 3.

Advanced Photography 3 hrs.
Advanced use of black/white and color photography as a means of expression in the production of fine art. Prerequisite: ARS 350 or approval of instructor. Lab Fee: Level 3.
360 Advanced Drawing
Drawing as a vehicle for personal expression utilizing traditional and contemporary methods and materials. Prerequisites: ARS 260 and completion of all lower division foundation requirements. Lab Fee: Level 3.

375 Painting I: Traditional Approaches
Traditional painting approaches are investigated through selected techniques ranging from fresco and egg tempera to under-painting, glazing and alla-prima work with oils. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

376 Painting II: Contemporary Approaches
Contemporary approaches toward painting are explored as means of expression, through both spontaneous and deliberate handling of acrylics and other painting media. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

377 Painting III: Mixed Media
Exploration of painting with mixed and non-traditional media as vehicles of expression including the use of assemblage and collage processes, shaped or contoured canvases, and related media. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

380 Printmaking: Intaglio
Beginning studio practice in etching, engraving, aquatint, photo-etching and dry-point. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

381 Printmaking: Lithography
Beginning studio practice in autographic and photographic lithography processes utilizing aluminum plate and stone. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

382 Basic Printmaking
Exploration of special printmaking techniques and processes used for generating ideas and images, including monoprints, relief prints, collagraphs, and non-traditional approaches. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

383 Printmaking: Screenprinting
Investigation of silkscreen processes, including autographic and photographic methods. Prerequisite: None. Art majors and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

393 Multi-Media
Study and practice of artistic approaches which freely combine elements of various art forms such as painting, printmaking, photography, sculpture, or performance, usually developed along strong conceptual or thematic lines. Prerequisite: None. Art major and minors must have completed all lower division foundation requirements. Lab Fee: Level 3.

PORTFOLIO REVIEW: Entry into a 400-level course sequence must be preceded by a departmental committee review of a student’s work.

430 Advanced Graphic Design I
Focuses on studio problems that foster greater understanding of current technological processes and on preparation of portfolio projects. Continues emphasis on typographic application in advertising layout and design. Prerequisite: ARS 333 or approval of instructor. Lab Fee: Level 3.
431 Advanced Graphic Design II 3 hrs.
Designed to enhance the student’s understanding of image manipulation and development. Illustration techniques, professional presentations, and portfolio preparation are also addressed. Prerequisite: ARS 430 or approval of instructor. Lab Fee: Level 3.

440 Advanced Sculpture I 3 hrs.
Continued exploration of assemblage processes. Prerequisites: ARS 340 and approval of instructor. Lab Fee: Level 3.

441 Advanced Sculpture II 3 hrs.
Continued exploration of subtractive processes. Prerequisites: ARS 341 and approval of instructor. Lab Fee: Level 3.

442 Advanced Sculpture III 3 hrs.
Continued exploration of casting and foundry processes. Prerequisites: ARS 342 and approval of instructor. Lab Fee: Level 3.

452 Advanced Photography: Non-silver 3 hrs.
Continued exploration of non-silver photographic processes. Prerequisites: ARS 352 and approval of instructor. Lab Fee: Level 3.

453 Advanced Photography: Black/White and Color 3 hrs.
Continued exploration of fine art photography. Prerequisites: ARS 353 and approval of instructor. Lab Fee: Level 3.

475 Advanced Painting I 3 hrs.
Continued exploration of oil painting processes. Prerequisites: ARS 375 and approval of instructor. Lab Fee: Level 3.

476 Advanced Painting II 3 hrs.
Continued exploration of contemporary painting approaches. Prerequisites: ARS 376 and approval of instructor. Lab Fee: Level 3.

477 Advanced Painting III 3 hrs.
Continued exploration of mixed and non-traditional media. Prerequisites: ARS 377 and approval of instructor. Lab Fee: Level 3.

480 Advanced Printmaking: Intaglio 3 hrs.
Continued exploration of intaglio processes. Prerequisites: ARS 380 and approval of instructor. Lab Fee: Level 3.

481 Advanced Printmaking: Lithography 3 hrs.
Continued exploration of lithographic processes. Prerequisites: ARS 381 and approval of instructor. Lab Fee: Level 3.

483 Advanced Printmaking: Screenprinting 3 hrs.
Continued exploration of silkscreen processes. Prerequisites: ARS 383 and approval of instructor. Lab Fee: Level 3.

493 Advanced Multi-Media 3 hrs.
Continued exploration of multi-media art works. Prerequisites: ARS 393 and approval of instructor. Lab Fee: Level 3.

495 Technical Problems 3 hrs.
Technical problems in studio disciplines for which advanced courses are not available. May be repeated for a total of six hours credit. Prerequisite: Approval of instructor. Lab Fee: Level 3.

Art History (ARH)

Lower Division Courses

Lower division art history courses explore the major monuments of western art, ancient through contemporary, in their historical and cultural contexts. These courses introduce the student to the basic analytic tools of art history.
100 Art History Survey: Ancient to Medieval 3 hrs.
Survey of the major works of art and architecture produced in the Near East, Egypt, and Europe from the Paleolithic period to the end of the Middle Ages, within the contexts of the cultures which created them.

101 Art History Survey: Renaissance to Modern 3 hrs.
Survey of the major works of art and architecture produced since the Renaissance, their major themes, the artists, and the critical issues that affected the cultures in which they were created.

201 Contemporary Art & Issues 3 hrs.
Major movements since World War II, including abstract expressionism, neo-dada, pop, photo-realism, minimalism, conceptual art, earth works, new realism, neo-expressionism, performance and post-modernism. Prerequisites: ARH 100, 101.

Upper Division Courses
Upper division art history courses present the art of specific periods in its historical, literary, philosophical, political, and social contexts. These courses guide the student in critical reading of selected art historical and interdisciplinary scholarship.

301 Greek and Roman Art 3 hrs.
Major works of art and architecture produced in ancient Greece and Rome from the ninth century B.C. through the fifth century A.D. Special attention to the relationship of the visual arts to political and social contexts and to other forms of cultural expression, such as philosophy, religion, literature, and drama. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

302 Medieval Art 3 hrs.
Major monuments of medieval art, from the time of Constantine through the late Gothic. Art and architecture are studied in their historical, religious, and political context. Special attention to interdisciplinary studies and their usefulness in gaining a fresh understanding of medieval art. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

303 Renaissance Art 3 hrs.
Art of Europe from 1250 to 1527, marked by the rise of artists as creative individuals, and their expanding role in society. The works of such northern and southern masters as Van Eyck, Durer, DaVinci, Michelangelo, and Titian will be studied. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

304 Twentieth Century Art 3 hrs.
Developments in European and American art from 1890 to World War II, covering major movements including Cubism, Dada, Surrealism, Expressionism, Russian Constructivism, and Abstract Expressionism. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

306 Baroque 3 hrs.
Development of Baroque and Rococo art in Europe. The art and architecture of this period will be examined through the works of Borromini, Bernini, Rubens, Rembrandt, Velasquez, Poussin and Watteau. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

307 Impressionism and Post-Impressionism 3 hrs.
European and American art from 1860 to 1900 will be examined through historical, political, social, philosophical, and literary perspectives. Impressionism, Post-Impressionism, Symbolism, and the "Art for Art's Sake" movement will be studied through the works of artists such as Monet, Renoir, VanGogh, Rodin, and Whistler. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.
310 Nineteenth Century Art 3 hrs.
European and American art from 1780 to 1860 will be examined through historical, political, social, philosophical, and literary perspectives. Neoclassicism, Romanticism, the Hudson River School, and Realism will be studied through the works of artists such as David, Goya, Turner, Cole, and Courbet. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

320 Special Topics in Art History 3 hrs.
Special topics on periods of art history selected from ancient to contemporary as offered. Prerequisite: None. Art majors and minors must have completed ARH 100, 101, 201.

400 Art History Seminar 3 hrs.
Directed study for the development of a scholarly research paper on special topics in art history as offered. Prerequisites: 12 semester hours of upper division ARH courses or approval of instructor.

500 Special Problems in Art History 3 hrs.
Directed reading and research. Prerequisites: 12 semester hours of upper division ARH courses and approval of instructor.

Communication Arts Department

Assistant Professors Kray, Lee, Roach (Chair); Instructors Fillipelli, Langford.

The Department of Communication Arts offers a comprehensive program of study leading to a Bachelor of Arts degree. The program is designed to provide students with a core background in the intellectual foundations of the power of speech, including historical, theoretical, and critical work in rhetoric, and to study strategies for creating and evaluating influence in a wide variety of communication situations, including relational, organizational, public, and mass communication settings.

Major in Communication Arts

A major in communication arts consists of 36 hours of coursework within the department, at least 21 hours of which must be at or above the 300 level. Students are encouraged to work closely with a faculty advisor to plan a program of study.

Eighteen (18) of the thirty-six (36) hours within the department are core requirements and must be completed by all majors. These courses are:

CM 113 (Introduction to Rhetorical Communication)
CM 230 (Mass Media in America: Theory and Criticism)
CM 250 (Communicating in Relationships)
CM 309 (History of Rhetoric)
CM 310 (Persuasion)

or CM 315 (Argumentation and Debate)
CM 431 (Senior Seminar in Communication)

A major in communication arts can also include approved coursework in allied disciplines. For example, students may select a technical writing course (EH 301), a course in civil liberties (PSC 471), a course in graphic art (ARS 330, 331) or an independent study in any discipline germane to the study of communication arts. To elect this option, a student must secure permission of the chair of the department. AHS 300 is a prerequisite for CM 431.
Minor in Communication Arts

A minor in communication arts consists of twenty-one (21) hours of coursework taken within the department, at least twelve (12) hours of which must be taken at or above the 300 level. Nine (9) hours of coursework must be completed by all minors: CM 113 (Introduction to Rhetorical Communication); CM 230 (Mass Media in America: Theory and Criticism); and one history of communication course selected from CM 309 (History of Rhetoric), CM 322 (History of Theatre), or CM 334 (History of American Cinema).

Communication Arts (CM)

110  Voice and Diction  3 hrs.
Language, speech, and hearing. Development of individual vocal skills. Offered alternate years. (Does not satisfy College of Engineering HU/SS requirement.)

113  Introduction to Rhetorical Communication  3 hrs.
Rhetorical theories and practice of public communication. Prerequisite: EH 101 or 105. (Does not satisfy College of Engineering HU/SS requirement.)

122  Theatre Appreciation  3 hrs.
Introductory survey of theatre art focusing on understanding performance components and genres.

201  News Writing  3 hrs.
Researching and writing news stories in a democratic society. (Does not satisfy College of Engineering HU/SS requirement.)

214  Oral Performance of Literature  3 hrs.
Theory and practice in intellectual, artistic, and communicative skills required to read prose, poetry, and drama aloud effectively. Prerequisite: CM 110 or CM 113, or approval of instructor. Summer term only.

230  Mass Media in America: Theory and Criticism  3 hrs.
Mass communication theory, history and criticism in the United States. (Same as SOC 230).

240  Communication Practicum  1 hr.
Credit for execution of major responsibility in communication arts activities under faculty supervision. May be repeated up to three times. Prerequisite: Approval of communication faculty before registration.

250  Interpersonal Communication.  3 hrs.
Interpersonal communication such as listening and conflict resolution. Prerequisite: CM 113 or approval of instructor. Spring term only.

251  Decision-Making in Small Groups  3 hrs.
Introduction to the theories and techniques of group discussion and decision-making, emphasizing the skills of leadership, participation, and oral presentation. Offered alternate years. Prerequisite: CM 113.

301  News Editing and Advanced Newswriting  3 hrs.
Continuation of CM 201: writing, research, composition, and layout. Prerequisite: CM 201 or approval of instructor. (Does not satisfy College of Engineering HU/SS requirement.)

309  History of Rhetoric  3 hrs.
Survey of rhetorical theory from ancient Greece and Rome through twentieth century. Prerequisite: CM 113 or approval of instructor.

310  Persuasion  3 hrs.
Principles and practices in persuasive communication, emphasizing observation and analysis of persuasive events on qualitative and quantitative levels. Offered fall term, alternate years. Prerequisite: Junior standing.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>311</td>
<td>Interviewing in Organizations</td>
<td>3 hrs.</td>
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<tr>
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<td>Interviewing, theory and practice, with</td>
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<td>emphasis on organizational settings.</td>
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<td></td>
<td>Prerequisite: Junior standing.</td>
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<tr>
<td>315</td>
<td>Argumentation and Debate</td>
<td>3 hrs.</td>
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<td></td>
<td>Theory and practice of argumentation and</td>
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<td>debate. Argumentation is examined as a</td>
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<td>mode of inquiry for presenting the</td>
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<td>processes by which people give reasons</td>
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<td>to justify their acts, beliefs, and</td>
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<td>values. Prerequisite: CM 113 or approval</td>
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<td>of instructor.</td>
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<td>322</td>
<td>History of Theatre</td>
<td>3 hrs.</td>
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<td>Explores the development of the theatre</td>
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<td>art form. Periods discussed include</td>
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<td>Ancient Greece and Rome, Elizabethan</td>
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<td>England, Neoclassic, Modern and</td>
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<td>Contemporary.</td>
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<td>330</td>
<td>Psychology of Communication</td>
<td>3 hrs.</td>
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<td>Theories, problems, and research in the</td>
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<td>areas of interpersonal, nonverbal, and</td>
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<td>mass communication, formulating a</td>
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<td>psychological conception of humans as</td>
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<td>information-gathering and information-</td>
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<td>processing systems. Prerequisite: 3 hours</td>
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<td>in CM. (Same as PY 330)</td>
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<td>333</td>
<td>History of International Cinema</td>
<td>3 hrs.</td>
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<td>Investigates cinematic understanding of</td>
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<td>aesthetics and trends in an international</td>
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<td>historical context (1895 to present).</td>
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<td>Offered alternate years. Prerequisite:</td>
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<td>CM 230 or approval of instructor.</td>
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<td>334</td>
<td>History of American Cinema</td>
<td>3 hrs.</td>
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<td>Investigates the American cinema as a</td>
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<td>cultural artifact by studying cultural</td>
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<td>and historical context of representations,</td>
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<td>audiences, aesthetics and industry</td>
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<td>practices in American cinema from its</td>
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<td>beginnings (1895) to present. Prerequisite:</td>
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<td>CM 230 or approval of instructor.</td>
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<tr>
<td>340</td>
<td>Special Topics in Communication Arts</td>
<td>3 hrs.</td>
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<td></td>
<td>Topics announced in advance. Representative topics in Mass Media are Women and Minorities in Media and Intercultural Communication. Possible topics in Rhetoric may include Criticism, Communication and Gender, and Women Orators in American Public Address. Open to students who have completed nine hours of coursework in CM. May be repeated twice for credit.</td>
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<td>350</td>
<td>Organizational Communication</td>
<td>3 hrs.</td>
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<td></td>
<td>Investigation of formal and informal</td>
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<td>communication in organizations, with</td>
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<td>emphasis on the relational and cultural</td>
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<td>forces affecting communication in</td>
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<td>corporations and government agencies.</td>
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<td>410</td>
<td>Political Communication</td>
<td>3 hrs.</td>
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<td>Investigation of the role communication</td>
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<td>plays in the political process. Examines</td>
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<td>the theories of communication and</td>
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<td>assesses their application in both</td>
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<td>election strategies and political</td>
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<td>maintenance functions. Prerequisite: CM</td>
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<td>113.</td>
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<td>413</td>
<td>Business and Professional Speaking</td>
<td>3 hrs.</td>
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<td>Intensive investigation of communication</td>
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<td>theories and skills involved in the</td>
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<td>design, delivery, and evaluation of</td>
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<td>business, technical, and professional</td>
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<td>speeches. Examines individual and group</td>
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<td>presentations typically encountered in</td>
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<td>organizations. Discusses speechwriting</td>
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<td>techniques. Offered alternate years.</td>
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<td>Prerequisite: CM 113.</td>
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<td>415</td>
<td>Contemporary American Public Address</td>
<td>3 hrs.</td>
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<td>Examines public address in America during</td>
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<td>the twentieth century. Applies principles</td>
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<td>of rhetorical criticism to analyze</td>
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<td>selected examples and trends in public</td>
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<td>communication. Offered alternate years.</td>
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<td></td>
<td>Prerequisite: CM 309 or CM 310.</td>
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<td>431</td>
<td>Senior Seminar in Communication Theory</td>
<td>3 hrs.</td>
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<td>and Research</td>
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<td>Required of all majors. Research and</td>
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<td>public presentation of original work</td>
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<td>demonstrating the ability to carry out a</td>
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<td>complete scholarly project. Prerequisites:</td>
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<td>15 hours of CM, senior standing and</td>
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<td>AHS 300. Offered spring term only.</td>
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</table>
433 Critical Methods in Film and Television Analysis  
Explores various methodologies and develops academic critical thinking about film and television. Prerequisites: CM 230, 333, 334 or approval of instructor.

450 Studies in Organizational Communication  
Examines various research methods and findings in the interpretive tradition. Special emphasis on investigations of symbolic inducement of meanings and ways in which the research and writing processes reflect them. Offered alternate years. Prerequisites: CM 350 and senior standing.

636 Seminar in Organizational Communication  

**Education Department**

Associate Professor Brindley; Assistant Professors Butts, Piersma (chair), Poole

Graduate and undergraduate programs are offered by the department.

**Special Facilities**

The department maintains a Teacher Materials Center and a Computer Education Laboratory where current teaching materials are available and where laboratory classes are held. Some in-field training is handled in cooperation with the local school systems.

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**THE STATE BOARD OF EDUCATION PERIODICALLY REVISES THE REQUIREMENTS GOVERNING CERTIFICATION IN THE STATE OF ALABAMA. THEREFORE, REQUIREMENTS FOR DEGREES LEADING TO CERTIFICATION ARE SUBJECT TO CHANGE FROM THOSE PUBLISHED IN THIS CATALOG. THE STUDENT IS REQUIRED TO SEEK ADVISEMENT FROM THE EDUCATION DEPARTMENT (AS EARLY AS POSSIBLE IN THE PROGRAM OF STUDY) TO ENSURE THAT BOTH DEGREE REQUIREMENTS AND CERTIFICATION REQUIREMENTS ARE MET.**

**Undergraduate Study in Education**

Students who plan to enroll in the Teacher Education Program and qualify for teacher certification should contact the chair of the Department of Education to be assigned an advisor as early as the freshman year. Students must also consult advisors from other approved academic departments to coordinate planning of programs of study. The Nursery-Grade 12 certification programs are available only in art and music.

**Admission to the Teacher Education Program**

During the sophomore year, students should apply for admission to the Teacher Education Program. Transfer students who have completed two years of undergraduate study must submit the application after completion of nine semester hours of work at UAH. Applicants must:

1. have a cumulative GPA of 2.5 on all work attempted,
2. have completed at least 60 hours (48 in the GER),
3. have satisfactory performance on the Alabama Basic Skills Test,
4. have satisfactory interview(s) with representatives of the Department of Education,
5. have passed ED 200 – Introduction to Education,
6. must have successfully completed (with a grade of “C” or higher) ED 230, 261, or 263 (or equivalent courses) before admission to the Teacher Education Program.
Notes: 1. Students who began collegiate study prior to June 1, 1977, may have the Basic Skills Test requirement waived.

2. Students who have not been accepted into the Teacher Education Program may not have accumulated more than 12 semester hours of coursework in education. Special permission may be requested from the department chair to take courses beyond the 12 hour limit. All students who are admitted to the Teacher Education Program must have an approved Program of Study on file in the Department of Education.

3. When a course substitution in professional studies or the teaching field is desired, permission from the State Department of Education must be obtained prior to enrolling in the course. Student should contact the Certification Officer to complete appropriate forms for such approval from the State Department of Education. This requirement is very crucial and must be adhered to. Courses taken without approval may prohibit a student from completion as planned.

4. All students admitted to the program will have a teacher education advisor assigned to them, as well as an advisor in the teaching field(s).

Application for Student Teaching

Students must apply for student teaching at least two academic terms before the term requested. For example, students who plan to student teach during the fall term must apply prior to the beginning of the preceding spring term. The following criteria must be met before the internship assignment is made:

(1) acceptance into the Teacher Education Program,

(2) a GPA of 2.5 on all work attempted,*

(3) a GPA of 2.5 on all work attempted in the teaching field(s),*

(4) a GPA of 2.5 in all work attempted in education courses, with no grade lower than a “C”,* and

(5) satisfactory completion of all appropriate General Education Requirements,

(6) satisfactory completion of all appropriate professional studies.

In Elementary Education, completion of the following professional courses is required before enrolling in student teaching: ED 200, 230, 261, 263, 360, 374, 375, 371 or 400, 372 or 373. (Exceptions may be possible with the permission of the department chair.)

In Secondary Education, completion of the following professional courses is required before enrolling in student teaching: ED 200, 230, 261, 263, 388, 408, and 510. ED 490 is to be taken concurrently with student teaching.

*Note: For students who began collegiate study prior to the fall of 1989, the GPA requirement is 2.2.

Initial Certification

The issuance of an Alabama teaching certificate is the legal responsibility of the Alabama State Department of Education. Colleges and universities cannot issue a professional certificate. However, in order to be certified at the professional Class B level, a student must complete an appropriate course of study at a college or university which has been approved by the State Board of Education. When the student has completed the course of study, the institution recommends to the State Department of Education that a certificate be awarded. It is the responsibility of the student to initiate the application for initial certification.

Near the end of the teacher education program, a student who wishes to apply for an Alabama teaching certificate should complete the Alabama State Department of Education certification application which can be obtained from the Certification Officer.
To be recommended for the teaching certificate a student, in addition to fulfilling the general degree requirements, must satisfactorily complete an approved program with:

1. a minimum of 5-day full-time structured field experience (if the student began collegiate studies in the fall of 1989 or thereafter);
2. a cumulative GPA of 2.5* on all work attempted;
3. a cumulative GPA of at least 2.5* on all work attempted in the teaching field(s);
4. a GPA of at least 2.5* on all work attempted in professional education; and
5. a passing score on a comprehensive exit examination that covers the content in the teaching field(s) and professional studies (for students who began collegiate study in the fall of 1989 or thereafter).

*Note: For students who began collegiate study prior to the fall of 1989, the GPA requirement is 2.2.

Successful completion of the bachelor’s program in teacher education leads to Alabama Class B certification which is valid for eight years. This certification may be renewed upon verification of successful teaching for four of the eight years and completion of an approved professional development program; or earning upper division or graduate level credit in the certification areas. Teachers are encouraged to earn Class A certification which may be incorporated into their employer’s professional development program.

Students seeking certification in other states may have to meet the specific requirements of those states. Some states have reciprocity with Alabama through interstate agreements of the State Departments of Education. It is the student’s responsibility to initiate this process.

General Education Requirements (B.A.)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition (EH 101 and EH 102)</td>
<td>6</td>
</tr>
<tr>
<td>or EH 105-Honors English Seminar (permission required)</td>
<td>3</td>
</tr>
<tr>
<td>Survey of Literature (EH 205 and EH 230)</td>
<td>6</td>
</tr>
<tr>
<td>Foreign Languages (two courses at 200 level or placement at that level)</td>
<td>6</td>
</tr>
<tr>
<td>Origin and Development of the Contemporary World (HY 101 and HY 102)</td>
<td>6</td>
</tr>
<tr>
<td>Fine Arts (ARH 100 or ARH 101 or MU 100 or MU 110 or CM 122)</td>
<td>3</td>
</tr>
<tr>
<td>Lower Division Humanities Course</td>
<td></td>
</tr>
<tr>
<td>(PHL 101 or any humanities course at the 200 level chosen from English,</td>
<td></td>
</tr>
<tr>
<td>philosophy—including PHL 201—or history) Course must be outside major</td>
<td></td>
</tr>
<tr>
<td>and minor except for teacher education students</td>
<td>3</td>
</tr>
<tr>
<td>Upper Division Humanities or Fine Arts Elective.</td>
<td></td>
</tr>
<tr>
<td>Chosen from English (excluding EH 300, EH 301, and EH 302), history,</td>
<td></td>
</tr>
<tr>
<td>philosophy, art, music, foreign languages (literature courses only),</td>
<td></td>
</tr>
<tr>
<td>or communication arts (CM 309 or CM 322) Course must be outside major</td>
<td></td>
</tr>
<tr>
<td>and minor except for teacher education students</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics. One course at Level II or above</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory Science. Two courses in a single discipline and one course in</td>
<td></td>
</tr>
<tr>
<td>a second laboratory science discipline. The choices must include some</td>
<td></td>
</tr>
<tr>
<td>biological and some physical science. (BYS, AST, CH, PH, or ES)</td>
<td>12</td>
</tr>
<tr>
<td>Social Sciences. Four courses are required. Teacher education students</td>
<td></td>
</tr>
<tr>
<td>must take PSC 101 and ECN 142 or 143; they may substitute ED 230 and</td>
<td></td>
</tr>
<tr>
<td>ED 263 for the other two courses.</td>
<td>12</td>
</tr>
<tr>
<td>Upper division social science elective. Chosen from political science,</td>
<td></td>
</tr>
<tr>
<td>sociology, psychology, or economics.</td>
<td>3</td>
</tr>
</tbody>
</table>
Additional Requirements.

Students who complete all requirements for teacher certification may take either ED 360 (for elementary education students) or ED 510 (for secondary education students) 3

HPE (HPE 294 plus 2 additional courses) 3

**General Education Requirements (B.S.)**

- **English Composition (EH 101 and EH 102)** 6
  - or **EH 105-Honors English Seminar (permission required)** 3

- **Survey of Literature (EH 205 and EH 230)** 6

- **Foreign Language and Communication Skills:**
  - (a) two MFL courses at the 200 level, 6
  - or
  
  - (b) three courses in communication skills (CS 108 or CS 113; CM 113; EH 301) 9

- **Origin and Development of the Contemporary World (HY 101 and HY 102)** 6

- **Fine Arts (ARH 100 or ARH 101; MU 101 or MU 110; PHL 101 or PHL 202 or PHL 311)** 6

- **Social and Behavioral Sciences:**
  - economics, political science, psychology, or sociology.
  - Six semester hours must be taken in one discipline. 6

  Teacher education students must take at least one economics course and PSC 101 6

- **Mathematics. One course at Level III or above** 3

- **Laboratory Science and Technical Studies:**
  - Note: Laboratory sciences are astronomy, biological science, chemistry, environmental science, and physics.
  - (a) Two courses in a single laboratory science, outside of major/minor, 8
  - and

  - (b) Coursework (to include at least one laboratory science course) in any department or program (outside of major/minor) in the Colleges of Science and Engineering 7-8

  Note: Teacher education students must have within major/minor and/or general education requirements, work in both biological and physical sciences.

HPE (HPE 294 plus 2 additional courses) 3

**ELEMENTARY EDUCATION**

The curriculum in elementary education provides a broad liberal education base, professional studies, and includes the study of a single discipline. It prepares the elementary teacher for the general responsibilities expected of all teachers and the specific competencies of the elementary classroom. In addition, this curriculum provides a base for movement into the middle school, if the teacher so desires.

Because of the scope of the elementary education program the student must inform the Education Department of this goal as early as possible. The student will be assigned an advisor to aid in planning an effective course of study. This planning also requires the student to seek counseling from an adviser in the department of the student’s cognate area of study.
Upon successful completion of the elementary education program, the student will be awarded a B.A. degree, will be recommended for the Alabama Class B Elementary Professional Teachers Certificate, and will be qualified to teach in grades 1-6.

**Course Requirements for an Elementary Education major:**

General Education Requirements (See B.A., above.)

**Major Program of Study—Elementary Education**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED 200 Introduction to Education</td>
<td>1</td>
</tr>
<tr>
<td>ARS 215 Art for Elementary Teacher</td>
<td>3</td>
</tr>
<tr>
<td>MUE 215 Music for the Young Child</td>
<td>3</td>
</tr>
<tr>
<td>ED 215 P.E. for Elementary Teacher</td>
<td>3</td>
</tr>
<tr>
<td>ED 230 Human Development</td>
<td>3</td>
</tr>
<tr>
<td>ED 261 Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>ED 263 Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ED 300 Group Processes</td>
<td>3</td>
</tr>
<tr>
<td>ED 360 Diagnostic &amp; Prescriptive Teaching</td>
<td>3</td>
</tr>
<tr>
<td>ED 372 Teaching Elementary Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>ED 373 Teaching Elementary Science</td>
<td>3</td>
</tr>
<tr>
<td>ED 374 Teaching Elementary Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>ED 375 Teaching Elementary Reading</td>
<td>3</td>
</tr>
<tr>
<td>ED 371 Teaching Elementary Language Arts or</td>
<td></td>
</tr>
<tr>
<td>ED 400 Literature for Children and Adolescents</td>
<td>3</td>
</tr>
<tr>
<td>ED 408 Teaching Reading in the Content Area</td>
<td>3</td>
</tr>
<tr>
<td>ED 493 Elementary School Internship</td>
<td>9</td>
</tr>
<tr>
<td>ED 593 Education of Exceptional Child &amp; Youth</td>
<td>3</td>
</tr>
</tbody>
</table>

55 hrs

Cognate Area (sociology, psychology, mathematics, history, English, etc.) 18 hrs. minimum (most are 21-24 hrs.) which must include 9-15 hrs. of courses at the 300-level or above.

A student planning to teach in an elementary field must select a cognate area from any academic department that offers an approved program. Approved programs in the College of Liberal Arts are art, English, communication arts, history, French, German, Russian, Spanish, music, political science, psychology and sociology. Approved programs in the College of Science are biology, chemistry, mathematics and physics. Economics is an approved program in the College of Administrative Science. Other cognate fields may be approved by petitioning for special consideration.

**HIGH SCHOOL EDUCATION**

The curriculum in high school education is planned to provide a broad liberal base, professional studies in high school teaching, and an in-depth study of two disciplines or of selected comprehensive fields (social science, language arts, general science) for the purpose of preparing teachers for service in senior high schools. Students may, at their option, also seek certification in middle/junior high school education, with additional coursework and internships. Preparation will be rigorous and will equip the teacher to work in the high school setting and to deal with adolescents.

Students should seek counseling as early as possible. Advisors will be assigned in both professional education and in the teaching field(s). The student will earn a B.A. or B.S. depending on the field chosen. Upon successful completion of the program the student will be recommended for the Alabama Class B High School Certificate, and will be qualified to teach in grades 7-12.
Course Requirements for a Secondary Education major:

General Education Requirements (See B.A./B.S. in Academic Information section of catalog.)

Program of Study—Secondary Education

ED 200 Introduction to Education 1
ED 230 Human Development 3
ED 261 Foundations of Education in the U.S. 3
ED 263 Educational Psychology 3
ED 388 Teaching Middle and High School Subjects 3
ED 408 Reading in the Content Area 3
ED 490 Senior Seminar in Education 3
ED 497 High School Internship 9
ED 510 Foundations of Educational Evaluation 3
ED 593 Education of Exceptional Children & Youth 3

34

In addition to the above, the student is required to have two teaching fields or one comprehensive teaching field. The one exception to this rule is mathematics which can stand alone.

Approved single teaching fields are French, German, Russian, Spanish, English, mathematics, biology, chemistry, physics, economics, history, political science, psychology and sociology.

Approved comprehensive teaching fields are language arts, general science, and social science.

The number of hours required varies from one teaching field to another. The student should seek advisement from the Education Department on this matter. The specific program of studies in the teaching field(s) will be developed with advisors from the chosen fields.

MIDDLE/JUNIOR HIGH SCHOOL ENDORSEMENT

Under the new State of Alabama plan, there are five levels of certification of teachers, namely: N-3, 1-6, 4-8, 7-12, and N-12. UAH offers all options except N-3. The curriculum in middle/junior high school education is an endorsement that can be added to either an Alabama Class B Elementary or Class B Secondary program. Students may, at their option, add certification in the middle school, with additional coursework and an additional internship. This program is designed to prepare teachers especially trained in dealing with youngsters undergoing the developmental changes of late childhood, puberty, and early adolescence. The emphasis will be on preparing academic generalists rather than specialists in subject fields.

For a person certified for grades 1-6 under the new standards, adding middle school endorsement would also permit teaching in grades 7 and 8 in the teaching field(s) for which the person has completed the requirements as otherwise outlined in this catalog. Students with a major in elementary education (1-6 certification) must meet the following additional requirements: (1) ED 388 - Teaching Middle and High School Subjects, (2) cognate must be extended to 27-30 approved hours in a single subject area, (3) additional internship in grades 4-8.

For a person with high school certification, adding middle school endorsement would also permit teaching in grades 4-6 in the teaching field(s) for which the person has completed the requirements. Additional requirements for students enrolled in the high school program (7-12) and seeking middle school endorsement are as follows: (1) ED 375 - Teaching Reading in the Elementary School, (2) additional internship in grades 4-8.

STUDENTS SHOULD SEEK COUNSELING AS EARLY AS POSSIBLE. Advisors will be assigned in both professional education and in the teaching fields. The student will earn a B.A. or B.S. depending on the chosen field(s). Upon successful completion of the program the student will be recommended for the Alabama Class B Middle/Junior High School Certificate and will be qualified to teach in grades 4-8.
N-12 CERTIFICATION

Programs are available in art and in music leading to Alabama Class B Certification for grades N-12. There is one program available in art studio and two programs in music education (instrumental, and vocal/choral). These programs are also devoted to providing a broad liberal base of studies. Preparation in the arts has traditionally been rigorous and extensive and these programs are no exception. Students should expect to take more than the minimum of 132 hours required for graduation. Early counseling with advisors is strongly recommended.

Course Requirements for an Art Major with Teacher Certification

Area of Concentration/Art Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARS 215 Art for the Elem. Teacher</td>
<td>3</td>
</tr>
<tr>
<td>ED 200 Introduction to Education</td>
<td>1</td>
</tr>
<tr>
<td>ED 230 Human Development</td>
<td>3</td>
</tr>
<tr>
<td>ED 261 Foundations of Education in U.S.</td>
<td>3</td>
</tr>
<tr>
<td>ED 263 Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ED 388 Teaching Middle &amp; High School Subjects</td>
<td>3</td>
</tr>
<tr>
<td>ED 408 Teaching Reading in the Content Areas</td>
<td>3</td>
</tr>
<tr>
<td>ED 490 Senior Seminar in Education</td>
<td>3</td>
</tr>
<tr>
<td>ED 499 Internship</td>
<td>9</td>
</tr>
<tr>
<td>ED 510 Foundations of Educational Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>ED 593 Education of Exceptional Children &amp; Youth</td>
<td>3</td>
</tr>
</tbody>
</table>

Art

The major in art studio is made up of some 51 semester hours of work, part of which may be included in the general studies component. This program should be planned with the Art Department providing advice and approval.

Course Requirements for a Music Education Major

General Education Requirements (See B.A. for Education Department)

Area of Concentration/Music Education: Instrumental or Vocal/Choral

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED 200 Introduction to Education</td>
<td>1</td>
</tr>
<tr>
<td>ED 230 Human Development</td>
<td>3</td>
</tr>
<tr>
<td>ED 261 Foundations of Education in U.S.</td>
<td>3</td>
</tr>
<tr>
<td>ED 263 Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ED 408 Teaching Reading in the Content Areas</td>
<td>3</td>
</tr>
<tr>
<td>ED 490 Senior Seminar in Education</td>
<td>3</td>
</tr>
<tr>
<td>ED 499 Internship</td>
<td>9</td>
</tr>
<tr>
<td>ED 510 Foundations of Educational Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>ED 593 Education of Exceptional Children &amp; Youth</td>
<td>3</td>
</tr>
<tr>
<td>MUE 225 Introduction to Music Education</td>
<td>1</td>
</tr>
<tr>
<td>MUE 326 Teaching General Music in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>MUE 327 Teaching General Music in Secondary Schools</td>
<td>3</td>
</tr>
<tr>
<td>MUE 428 Organizing and Directing Vocal Groups in Secondary Schools</td>
<td>12</td>
</tr>
<tr>
<td>or</td>
<td>40</td>
</tr>
<tr>
<td>MUE 429 Organizing and Directing Instrumental Groups in Secondary Schools</td>
<td>40</td>
</tr>
</tbody>
</table>
Music: Instrumental or Vocal/Choral

The majors in music education (both instrumental and vocal/choral) are made up of some 48-51 semester hours of coursework, part of which may be counted as general studies. These programs of study should be planned with the Music Department providing advice and approval.

Education (ED)

111 Career Exploration 1 hr.
Educational and vocational planning. Prerequisites: 9 hours college credit.

115 Effective Reading and Study Skills 3 hrs.
Basic reading-skill development in class activities to raise skills on literal, interpretive, critical, and creative levels of comprehension.

200 Introduction to Education 1 hr.
Initial practicum experience designed to provide the opportunity to explore the role of the classroom teacher and to help make decisions about the choice of teaching as a profession. Students will spend 10 consecutive days in a classroom in their designated field, followed by 15 hours of campus-based instruction. (Prerequisite for admission to Teacher Education Program).

230 Human Development 3 hrs.
Overview of human development stressing continuity from conception to adulthood. Practical applications for teachers and parents.

261 Foundations of Education in the United States 3 hrs.
Survey of social, cultural, historical, and philosophical foundations of education; interrelationships of society and education, effects of social change and influences of social-cultural values upon education; educational ideas and processes as they attempt to shape curricula. The perennial search for the meaning of education, perceived not merely as schooling, but as a process of enculturation and socialization.

263 Educational Psychology 3 hrs.
Psychological principles basic to an understanding of the learner, the learning process, and the learning situation. Prerequisite: sophomore standing.

325 The Sociology of Education 3 hrs.
Sociological approach to the study of education as a social institution; its structure, function and role in contemporary life. Prerequisite: SOC 100 or approval of instructor. (Same as SOC 325).

411 Guidance for Teachers 3 hrs.
Sociological, psychological, and philosophical bases for guidance in schools.

456 Mental Health in the School 3 hrs.
Dynamics of behavior, recognition of minor maladjustments, criteria for referral, and classroom practices supporting good mental health. Prerequisite: ED 263 or junior standing.

467 Tests and Measurements 3 hrs.
Survey of standardized and teacher-made evaluation instruments.

500 Special Problems in Education 3 hrs.
Independent study, special projects, and special in-service programs. Prerequisite: senior standing.

502 Environmental Education 3 hrs.
General nature of ecological life systems, relationships of humankind and environment, major conservation problems facing the world today, exploration of alternate solutions and the tasks for educators.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>510</td>
<td>Foundations of Education Evaluation</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>549</td>
<td>Audiovisual Instruction</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Audiovisual media in teaching and the selection, use, and maintenance of audiovisual materials in educational programs.</td>
<td></td>
</tr>
<tr>
<td>593</td>
<td>Education of Exceptional Children and Youth</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Introduction to the field of exceptional children and youth, including observations. This course, or equivalent, is a prerequisite to certification.</td>
<td></td>
</tr>
</tbody>
</table>

**Elementary Education**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>215</td>
<td>Physical Education for the Elementary Teacher</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Basic understanding of body alignment, developmental exercises and movement exploration activities for physical education in elementary grades. Study of student needs to provide proper equipment, facilities, and leadership for the overall program.</td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>Teaching the Young Child</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Total pattern of child development, curriculum, learning, methods, and guidance for the child from two to nine years of age.</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Group Processes</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Major principles of group dynamics and their effective use in education. Informal group counseling experiences for better understanding of self and others as an integral part of the course methodology. Course is graded S/U only. (Enrollment for less than 3 hours credit only with permission of the instructor.)</td>
<td></td>
</tr>
<tr>
<td>360</td>
<td>Diagnostic and Prescriptive Teaching</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Strengths and deficiencies of student in academic area and a program to enhance strengths and remedy weaknesses. Group and individual processes. Prerequisites: ED 263, junior standing and admission to the Teacher Education Program.</td>
<td></td>
</tr>
<tr>
<td>371</td>
<td>Teaching Elementary Language Arts</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. Prerequisite: admission to the Teacher Education Program.</td>
<td></td>
</tr>
<tr>
<td>372</td>
<td>Teaching Elementary Social Studies</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Curriculum instructional approach, and materials for teaching social studies in grades 1-6. Helping beginning teachers acquire background skills in organizing and teaching units of work. Prerequisite: admission to the teacher education program.</td>
<td></td>
</tr>
<tr>
<td>373</td>
<td>Teaching Elementary Science and Health</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Review of the major concepts taught in the elementary classroom in natural and health science. Opportunity to refine teaching skills in the planning, implementation, and evaluation of science lessons and units of instruction. Prerequisite: admission to the Teacher Education Program.</td>
<td></td>
</tr>
<tr>
<td>374</td>
<td>Teaching Elementary Mathematics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. Prerequisite: admission to the Teacher Education Program.</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>375</td>
<td>Teaching Elementary Reading</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>400</td>
<td>Literature for Children and Adolescents</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>492</td>
<td>Observation and Participation in Teaching</td>
<td>3-6 hrs.</td>
</tr>
<tr>
<td>493</td>
<td>Elementary School Internship</td>
<td>9 hrs.</td>
</tr>
<tr>
<td>494</td>
<td>Elementary School Internship</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

**Middle and High School Education**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>388</td>
<td>Teaching Middle and High School Subjects</td>
<td>3 hrs.</td>
<td>Building of curricula, methods of teaching, and classroom communication skills. (Major area of teaching to be designated.) Prerequisite: admission to Teacher Education Program.</td>
</tr>
<tr>
<td>408</td>
<td>Teaching Reading in the Content Area</td>
<td>3 hrs.</td>
<td>Provides knowledge of certain basic developmental and remedial reading skills, practices, and concepts. Extends those learned in previous, more fundamental, reading courses and shows how to apply fundamental skill and knowledge to the regular middle school/high school 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. Prerequisite: junior standing.</td>
</tr>
<tr>
<td>490</td>
<td>Senior Seminar in Education</td>
<td>3 hrs.</td>
<td>To be taken concurrently with student teaching. Prerequisites: ED 388 and senior standing.</td>
</tr>
<tr>
<td>495</td>
<td>Middle School Internship</td>
<td>9 hrs.</td>
<td>Focuses on apprenticeship training in a natural teaching-learning environment. During the assignment the role of the student teacher/intern will vary from that of being an interested observer to that of being responsible for the day-to-day teaching and learning activities within an assigned classroom. The student teacher/intern is expected to assimilate university training and on-site activities in order to synthesize...</td>
</tr>
</tbody>
</table>
methods and strategies for future professional use. A minimum of 100 clock hours of 
actual teaching and some 300 hours overall is required. This corresponds to the State 
Department of Education requirement for 10 consecutive teaching days. 
Prerequisites: all required professional educational courses should be complete 
before admission to the program.

496 Middle School Internship 3 hrs. 
Essentially the same as ED 495. However, it will require a minimum of 100 total 
clock hours, including a minimum of 30 hours of responsible teaching. It is to be 
used by persons seeking dual certification or by post-graduate students seeking additional 
areas of endorsement. Prerequisite: permission of the department chair.

497 High School Internship 9 hrs. 
Observation and student teaching in secondary schools. Prerequisites: ED 230, 261, 
263, 388, 408, 510 and approved application for student teaching. ED 490 is to be 
taken concurrently with student teaching.

498 High School Internship 3 hrs. 
Essentially the same as ED 497. However, it will require a minimum of 100 total 
clock hours, including a minimum of some 30 hours of responsible teaching. It is to 
be used by persons seeking dual certification or by post-graduate students seeking 
additional areas of endorsement. Prerequisite: permission of the department chair.

Other Internships

499 N-12 Internship (Art, Music) 9 hrs. 
Supervised teaching experience in local schools. A minimum of 75 clock hours of 
actual teaching and some 300 hours overall is required. Concurrent conferences 
arranged as needed. Prerequisite: an approved application for student teaching.

English Department

Professors Martin (Interim Chair), Wilson; Associate Professors Mebane, Moore, Munson, 
Neff, Norman, Schenker; Assistant Professors Dillard, Early, Mangum, Nelson, Szilagyi; 
Instructor Allen; Lecturers Bradburn, Lavan, Singer, Singh.

The Department of English offers courses to fulfill requirements for the major and minor in 
English at the bachelor’s degree level. It also offers a program leading to teacher certification, a 
cognate option in technical writing, and a variety of writing courses at all levels, including 
English for foreign students (ESL). A Master of Arts degree in English is described in the 
Graduate Catalog.

DECLARING THE MAJOR

Students wishing to major in English should make that declaration at the beginning of the 
sophomore year. The English Department office provides forms for this purpose and will let the 
student choose an advisor or will assign one.

English Major

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophomore Survey (as described in GER) 6</td>
</tr>
<tr>
<td>Shakespeare (EH 360) 3</td>
</tr>
<tr>
<td>American literature (EH 330, 331, 339, 430, 431, 530, 532, 533) 3</td>
</tr>
<tr>
<td>Literature before 1800 (EH 380, 381, 450, 460, 470, 472, 474, 492, 551, 571) 6</td>
</tr>
</tbody>
</table>
| Literature after 1800 (EH 330, 331, 390, 391, 418, 420, 421, 430, 431, 493, 
  500, 532, 533, 594) 6 |
| Electives 12 |
| Total 36 |
Further requirements and conditions for the major:
1. One course devoted entirely to the novel; additional such courses count as English electives.
2. Two courses (6 semester hours) in 400- or 500-level courses.
3. For transfer students, 12 semester hours in upper level English courses (numbered 300 or above) at UAH.
4. No more than one course in creative writing may count toward the major.

English Minor
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- or 500-level. Half of the upper level requirement (6 semester hours) must be taken at UAH. Please note: courses in technical and business writing may not be used in the minor without special permission from the department chair.

Semester Hours

Sophomore Survey (as described in GER) 6
Shakespeare (EH 360) 3
Courses numbered 300, 400, or 500 9
Courses numbered 400 or 500 3

21

Cognate Studies in Technical Writing
This unique cognate is available for students with majors in any school. Preparation for a career in the field of technical writing should combine intensive training in writing with practical experience and fundamental technical skills. The 21-hour cognate studies curriculum brings together all three. All students must take EH 301 (Technical Writing), EH 302 (Technical Editing), and EH 320 (Practicum in Writing) in sequence. Students with non-technical majors should plan early to take courses in technical or scientific fields. Students with technical majors should consult the Coordinator of Business and Technical Writing for current requirements. A typical program for a non-technical major is:

Semester Hours

Technical Writing (EH 301) 3
Technical Editing (EH 302) 3
Practicum in Writing (EH 320) 3
Language course (EH 307 or 508) 3
Technical courses approved by Coordinator 9

21

English for Teacher Certification Candidates
Requirements for teacher certification are described in this catalog in the Education section. All teacher candidates must have an advisor in the Education Department and the English Department. Candidates may major or minor in English. A minor is 27 semester hours chosen from the following areas:

Semester Hours

EH 101-102 6
EH 205 and 230 6
American Literature (EH 330,331,339,430,431,530,532,533) 3
Shakespeare (EH 360) 3
Literature before 1800 (EH 380,381,450,460,470,472,474,492,551,571) 3
Literature after 1800 (EH 330,331,390,391,418,420,421,430,493,500, 532,533,594) 3

One 3-hour course in creative writing (EH 310) may be substituted for any course in the pre-1880 or post-1800 categories.
English for Second Area of Study  

Students majoring in elementary or secondary education may select English as their second area of study. This area consists of a minimum of fifteen hours beyond the freshman composition requirement (EH 101 and 102) and the sophomore literature requirement (EH 205 and 230). These hours must be in courses numbered 300 or above and must be selected from the courses listed below with the approval of a faculty advisor in the Education Department and the chair of the English Department.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>American literature (EH 330, 331, 339, 430, 431, 530, 532, 533)</td>
<td>3</td>
</tr>
<tr>
<td>Shakespeare (EH 360)</td>
<td>3</td>
</tr>
<tr>
<td>Structure of Modern English (EH 307)</td>
<td>3</td>
</tr>
<tr>
<td>Literature before 1800 (EH 380, 381, 450, 460, 470, 472, 474, 492, 551, 571)</td>
<td>3</td>
</tr>
<tr>
<td>Literature after 1800 (EH 330, 331, 390, 391, 418, 420, 421, 430, 493, 500, 532, 533, 594)</td>
<td>3</td>
</tr>
</tbody>
</table>

One 3-hour course in creative writing (EH 310) may be substituted for any course in the pre-1800 or post-1800 categories.

### English (EH)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>003</td>
<td>Basic English</td>
<td>No credit</td>
</tr>
<tr>
<td></td>
<td>Required for students whose placement test score or class performance indicates the need of remedial work.</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Freshman Composition</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Emphasis on writing, including at least one documented paper; readings in the essay and other non-fiction prose models. Prerequisite: placement.</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>Freshman Composition</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Emphasis on writing related to close critical reading of fiction, drama, and poetry. Prerequisite: EH 101.</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>Honors English Seminar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interpretive and comparative readings in texts of enduring intellectual, esthetic, and ethical importance; critical and analytic writing and research. Prerequisite: formal admission to the University Honors Program.</td>
<td></td>
</tr>
</tbody>
</table>

Courses below are open to students who have completed 6 hours of freshman composition, with exceptions as indicated.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>Survey of English Literature</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Anglo-Saxon period through Milton.</td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>Survey of English Literature</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Restoration through twentieth century.</td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>Fiction Writing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Practice in writing of fiction from conception to revision. Prerequisites: GER literature requirement and approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>Survey of American Literature</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Survey of writers, genres, and periods from the Puritans to the present day.</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>World Literature</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Selected major contributions to western civilization; Homer to the Renaissance.</td>
<td></td>
</tr>
<tr>
<td>241</td>
<td>World Literature</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Selected major contributions to western civilization; Rabelais to the present.</td>
<td></td>
</tr>
</tbody>
</table>
242 Mythology 3 hrs.
Archetypal, metaphorical, and historical significance of deities and myths.

250 Honors World Literature Seminar I: 3 hrs.
Major texts from the Ancient World to 1700. Prerequisite: EH 105 or admission to Honors Program.

251 Honors World Literature Seminar II: 3 hrs.
Major texts from 1700 to the present. Prerequisite: EH 105 or admission to Honors Program.

310 Advanced Fiction Writing 3 hrs.
Workshop in advanced fiction writing. Prerequisite: Approval of instructor.

Courses below are open to students who have completed the general education requirement in literature, with exceptions as indicated.

330 Major American Writers 3 hrs.
Major writers from the Colonial period to Whitman and Melville.

331 Major American Writers 3 hrs.
Dickinson to Eliot and Faulkner.

339 Special Studies in American Literature and Culture 3 hrs.
Topics announced in advance.

340 Special Topics in Literature 3 hrs.
Theme, writer, or historical movement to be announced in advance.

345 Special Topics in Film, Literature, and Film Theory 3 hrs.
Offered periodically on varying topics.

360 Shakespeare 3 hrs.
Renaissance background and at least six plays, including history, comedy, and major tragedies.

380 Restoration and Early Eighteenth Century 3 hrs.
Dryden, Swift, Pope, and others.

381 Later Eighteenth Century 3 hrs.
Johnson, Boswell, and others.

390 The Romantic Period 3 hrs.
Poetry and nonfictional prose, 1780-1832.

391 The Victorian Period 3 hrs.
Poetry and nonfictional prose, 1832-1901.

418 Representative Texts by Women Writers 3 hrs.
Focus on women’s contribution to the literary tradition.

420 Modern Poetry 3 hrs.
American and British poetry from the 1890’s to the present: Yeats, Pound, Eliot, Frost, Stevens, and others. Poets will be studied against the background of the social, political, and technological revolutions that characterize the present century.

421 Modern Drama 3 hrs.
New movements in drama from Ibsen to the present.

430 The American Novel 3 hrs.
The American novel from the beginning through James.

431 The American Novel 3 hrs.
Selected novels of the present century.

450 Chaucer 3 hrs.
The Canterbury Tales and other major works.
460 Sixteenth-Century Poetry and Prose
More, Wyatt, Sidney, Spenser, and others.

470 Milton
Milton’s minor poems, selected prose, and Paradise Lost. Recommended prerequisite: one upper level English course.

472 Seventeenth-Century Poetry
Seventeenth-century poetry, excluding Milton. Recommended prerequisite: junior standing.

474 Seventeenth-Century Prose 1600-1660
Major prose writers of the period, with emphasis on the transitional nature of their ideas and styles, and on rhetorical background and genres. Recommended prerequisite: one upper level English course.

492 The English Novel
Defoe to Jane Austen: critical reading of representative novels accompanied by historical study of the emergence of the genre.

493 The English Novel
Dickens through Hardy: critical reading of representative novels accompanied by historical survey of major trends.

The following advanced undergraduate courses are suggested for seniors; others should request permission from an advisor or the instructor of the course under consideration.

500 Literary Criticism and Theory
Major texts and approaches from Plato to the present.

530 Special Studies in American Literature
Topics announced in advance.

532 Literature of the American South
Selected figures and movements from colonization to the present.

533 William Faulkner
Biography, background, and critical study of the major novels.

540 Special Studies in English Literature
Topics announced in advance.

551 Middle English Literature
Literature of later medieval England, excluding Chaucer, chosen from the Gawain poet, Malory, romance and dream vision, the drama, and the short poem.

571 Renaissance Drama
Major plays of the sixteenth and early seventeenth centuries, including Marlowe, Jonson, and others. Excludes Shakespeare.

594 Studies in the Twentieth-Century Novel
Considers responses to the experience of modernity; focus on English and American but in different years; texts will also be drawn from Continental, Latin American, Asian, or African traditions.

Linguistics and English Language Studies

The department offers a variety of courses related to General Linguistics, English Language, Grammar, and the Teaching of English to Speakers of Other Languages (TESOL). For those who are interested in the Teaching of English to Speakers of Other Languages (TESOL), the department offers a certificate in TESOL in conjunction with the M.A. degree. Interested
undergraduates may take courses which would be helpful, should they eventually want to go on for the TESOL certificate and M.A. degree. Such students should consult with the chairperson or the director of the TESOL Program.

English Linguistics and TESOL (EHL)

307 Structure of Modern English 3 hrs.
Analysis and description of major aspects of the phonological, morphological, and syntactic components of modern English. An eclectic grammatical approach which includes traditional, structural, and transformation grammar. Emphasis is on analysis and practical application of grammar. Prerequisite: successful completion of basic English requirements or approval of the instructor.

505 Survey of General Linguistics 3 hrs.
A survey of the field of linguistics, including language typology, distribution of major languages of the world, cognition, topics in socio- and psycho-linguistics, theories of grammar, and an introduction to writing mini-grammars. Draws on comparative examples of English with other world languages.

506 Introduction to Old English 3 hrs.
Introduction to the phonology, morphology, and syntax of Old English; intensive reading of Old English prose and verse texts which characterize the Anglo-Saxons.

An advanced grammar course which includes traditional and contemporary analyses of major English syntactic patterns; dialect studies; analysis of style; selected socio- and psycho-linguistic topics.

508 History of the English Language 3 hrs.
Phonological, morphological, syntactic, and semantic changes in the English language from the pre-Anglo-Saxon period to the modern English period; historical events that have influenced and effected these changes.

English Technical and Business Writing (EHT)

300 Strategies for Business Writing 3 hrs.
Practical business writing with emphasis on rhetoric, organization, and research. Prerequisites: 6 hours of freshman composition; CM 113, BIB 230, junior standing; open to all students in the School of Administrative Science or by permission of the Department of English. Does not count toward English minor. Lab Fee: Level 4.

301 Technical Writing 3 hrs.
Practical writing, especially technical or scientific reports and proposals, with emphasis on organization, research, and presentation. Prerequisites: EH 101 and junior standing; EH 102 recommended. Does not count toward English minor except for Cognate Studies in Technical Writing. Lab Fee: Level 4.

302 Technical Editing 3 hrs.
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. Prerequisites: EH 300 or EH 301. Does not count toward English minor except for Cognate Studies in Technical Writing. Lab Fee: Level 4.

320 Practicum in Writing 1-3 hrs.
Writing and editing under the supervision of professionals. May be repeated up to three separate terms for no more than 3 hours total credit. Prerequisites: EH 301, EH

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. May then become the basis for further graduate study in technical communication. Prerequisites: advanced undergraduate standing; EHT 301 and 302 are strongly recommended.

502 Problems in Technical Editing 3 hrs.
Advanced study of research and practice in common problems of technical editing, including documentation standards, document design, and management of complex editorial projects. Involves collaborative project with professional writers in industry. Prerequisites: EHT 302 or 501.

English as a Second Language (ESL)

The English Department offers courses in English as a Second Language (ESL) for those non-native speakers of English who need to improve their English language skills. ESL 101 and 102 are designed primarily to assist students to improve their oral production, aural comprehension, and vocabulary; ESL 103 and 104 are designed to assist students in improving their reading comprehension and composition skills. Placement tests are given prior to the commencement of terms; non-native speakers of English are advised to contact the Office of Admissions and Records or the English Department for time and place of testing.

101 ESL Spoken English I 3 hrs.
Spoken English emphasizing the sound system (including pronunciation, intonation patterns, basic sentence patterns and their transforms, and vocabulary improvement expansion). Includes general conversational topics and topics directly related to the academic environment. Prerequisite: Minimum of mid-beginning ESL oral-aural English skills.

102 ESL Spoken English II 3 hrs.
Spoken English for non-native speakers at the mid-intermediate to mid-advanced ESL level. Course emphasizes oral English used in the academic environment and prepares students to participate freely in classroom discussions, on panels, and in interviews. Prerequisite: Minimum of mid-intermediate skills in ESL oral-aural skills.

103 ESL Composition I 3 hrs.
Basic composition emphasizing those skills necessary to write effective sentences and paragraphs. This course includes basic mechanics, vocabulary expansion, and the concepts of unity and coherence. Students receive an introduction to planning and writing compositions. Prerequisite: mid-beginning to mid-intermediate ESL composition skills.

104 ESL Composition II 3 hrs.
Advanced composition course designed to further the writing skills of non-native speakers. This course provides the student with instruction and practice in writing whole works, essays, research papers. It focuses on both form and content. Prerequisite: mid-intermediate to advanced ESL composition skills.
The acquisition of a second language, and through it an understanding of another country’s literature and culture, is a rich academic experience for students interested in the liberal arts or in a career in today’s world of global markets, increasing political interdependence, and international scientific collaborations. The programs are designed to teach the effective use of a foreign language, both oral and written, in various areas of academic and professional life.

**French, German, Japanese*, Latin*, Russian, Spanish**

The department offers the B.A. in French, German, and Spanish, minors in French, German, Russian, and Spanish, and participates in the Slavic Area Studies Program, a B.A. degree program. A composite major in Foreign Languages and International Trade (in cooperation with the College of Administrative Science) with French, German, Russian, or Spanish is also available, and leads to a B.A. degree.

*Japanese and Latin courses can be taken to satisfy the language requirements or as electives.

**General Education Requirements and Placement Procedures**

Twelve semester hours of credit in one foreign language are required for the B.A. and can be an option in the B.S. degree unless the student can demonstrate a competence at a level more advanced than the beginning 101 course. French, German, Russian and Spanish courses at 100- and 200-level are taught at least twice each calendar year.

Students with a prior knowledge of French, German or Spanish may take the CLEP examination for the equivalent of 101 and 102. Irrespective of the resultant placement, the student will have to take a minimum of six additional hours of course work to fulfill the language requirement. The test is administered by the UAH Testing Services and must be taken prior to enrollment in foreign language classes. Tests are given quarterly; see Testing Services for dates. Interested students should contact the respective foreign language coordinator for further information. By taking the CLEP test, a student may receive credit hours with no quality points depending on placement level and score. Since there is no CLEP test for Russian, students of that language may take a special departmental test under the same conditions as the CLEP examination. See the Russian language coordinator.

Native and quasi-native speakers of foreign language may not take introductory and intermediate courses, nor the first advanced conversation course in that language. Students in this category must make an appointment with the appropriate language coordinator to take a departmental placement examination. They may earn up to fifteen hours of credit with no quality points and must still take a minimum of six additional hours of course work.

Students who studied a foreign language in high school will be placed according to the following scale:

<table>
<thead>
<tr>
<th>Placement Level</th>
<th>Language in High School</th>
<th>Courses to be Taken to Satisfy Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st level (101)</td>
<td>0-1 units*</td>
<td>101, 102, 201, 202</td>
</tr>
<tr>
<td>2nd level (102)</td>
<td>1-2 units</td>
<td>102, 201, 202</td>
</tr>
<tr>
<td>3rd level (201)</td>
<td>2-3 units</td>
<td>201, 202</td>
</tr>
<tr>
<td>4th level (202)</td>
<td>3-4 plus</td>
<td>202 plus one 300-level</td>
</tr>
</tbody>
</table>

*Minimum grade of C required for a unit to be counted.
If an interval of two years or more occurs between study of a language in high school and continuation of that language in college, placement levels may be adjusted downward to entry level.

The Foreign Language Department will award credit to students who have earned a score of three or higher on Advanced Placement (AP) Program examinations of the College Entrance Examination Board according to the following scale:

- **Score of 3:** 9 hours credit (i.e. through 201)
- **Score of 4:** 12 hours credit (through 202)
- **Score of 5:** 15 hours credit (through 301)

The credit thus awarded will be recorded without grades or quality points and will not therefore, be included in the calculation of the grade point average.

Moreover, regardless of the student’s AP score, he or she will be required to complete successfully two additional courses (6 credit hours) of the appropriate language.

**Foreign Language Major**

This major offers students a personally and academically enriching program in French, German, Slavic area studies, and Spanish. Firmly guided by principles of humanistic thinking, the curriculum places equal emphasis on communicative proficiency, literary criticism, and cross-cultural awareness.

A foreign language major consists of 24 semester hours above the basic course sequence in a single language. Students beginning the language on the 101 level must take a total of 36 hours.

A student seeking teacher certification in a language must take 36 semester hours of credit in the language of choice. Nine hours or three courses must be at the 300 level and six hours or two courses must be at the 400 level. See further instructions under Programs involving Teacher Education/Certification.

A transfer student declaring a major or minor must have a minimum of six (6) hours of upper-level credit earned at UAH. in the language studied.

**Foreign Language Minor**

A foreign language minor consists of 12 semester hours above the basic-course sequence in a single language. Students beginning the language on the 101 level must take a total of 24 semester hours. Conversation, advanced grammar and composition, and one of the introduction to literature courses are required. An additional course on the 300- or 400-level completes the requirement for the minor. Students beginning the language on the 300 level must still take a total of 21 hours even if they exceed the 12 hours above the basic course sequence normally required for a minor.

**Program of Study Models**

Students majoring in a foreign language will find a program of study which enables them to develop depth and breadth in the major and related areas: other languages, humanities, social and behavioral sciences, mathematics, engineering, natural sciences, and elementary education. Students who wish to plan their own program of study should do so in consultation with a member of the particular language faculty. This Program of Study may also be used for teacher certification.

**Program of Study with French Major**

Required courses: FH 301, 302, 305, 306, three courses on the 400-level, and one elective from either the 300- or 400-level.
Program of Study with German Major
Required courses: GN 301, 302, 305, 306, three courses on the 400-level, and one elective from either the 300- or 400-level.

Program of Study with Spanish Major
Required courses: SH 301, 302, two of the introduction to literature courses (305, 306, 307, or 308), three courses on the 400-level, and one elective from either the 300- or 400-level.

Program of Study with Slavic Area Studies Major
The Slavic area studies major is an enrichment program which prepares students for careers in government, industry, international commerce and trade, and other related areas of work, while providing the necessary preparation for graduate level studies.

Drawing from three disciplines, foreign languages and literatures, history, and political science, the program places emphasis on Russian studies with strong supporting work in history and political science.

Slavic area studies offers the student intensive training aimed at the development of competency in more than one area. Requirements for the Slavic area studies major are:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN 101, 102, 201, 202, 301, 302, 304, 305, 306, and three 400-level courses</td>
</tr>
<tr>
<td>HY 101, 102, 375, 376, 479 and 490</td>
</tr>
<tr>
<td>PSC 101, 135, and nine hours drawn from 246, 336, 337 and 338</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Foreign Languages and International Trade
The department offers a degree program that combines the study of a foreign language, administrative science, history, and other disciplines related to international trade. Such a program of study opens up a broad variety of career opportunities in the multinational and multilingual business world of today.

In addition to the general education requirements for the B.A. degree, the student’s program must include the following courses:

**Foreign Languages**
- Intermediate foreign language (French, German, Russian or Spanish) 6 hrs.
- 301 Conversation 3 hrs.
- 302 Advanced Composition 3 hrs.
- 303 Business and Professions 3 hrs.
- 304 Culture 3 hrs.
- 305, 306, 307, or 308 (Surv. of Literature) 3 hrs.
- 400 Foreign language electives 6 hrs.
- 410 Practicum 3 hrs.

| Total | 30 hrs. |

**Administrative Science Cognate**
- ECN 142, 143 Principles of Economics 6 hrs.
- ACC 211, 221 Principles of Accounting I 3 hrs.
- ACC 212, 222 Principles of Accounting II 3 hrs.
- BLS 211 Legal Environment of Business 3 hrs.
- FIN 301 Principles of Finance 3 hrs.
- MGT 301 Principles of Management 3 hrs.
MKT 301 Principles of Marketing 3 hrs.
Administrative Science/international business elective 3 hrs.
(one course selected from FIN 454, MGT 450, or MKT 415)
Total 27 hrs.*

*In no case may the Administrative Science courses included in a student’s program of study exceed 25 percent of the student’s program.

Other Requirements
One of the following appropriate to language:
HY 399 Special Topics 3 hrs.
HY 341 History of France 3 hrs.
HY 343 History of Germany 3 hrs.
HY 376 Twentieth Century Russia 3 hrs.
HY 392 Europe, 1815 to present 3 hrs.
One course from the following:
HY 391, HY 478, HY 479, or HY 374 3 hrs.
PSC 135 Comparative Government 3 hrs.
PSC 362 International Law 3 hrs.
One course from the following:
PSC 260, PSC 342, PSC 344, PSC 346, or PSC 348 3 hrs.
Total 18 hrs.

Programs Involving Teacher Education/Certification
A student majoring in elementary education may utilize French, German, Russian or Spanish for a cognate area (second area of study). The cognate area in foreign languages will total 27 hours and must include 15 hours of courses 300-level or above, 9 hours of which must be 300-level courses and 6 hours which must be 400-level courses. A student seeking certification in Middle/Junior High School Education or High School Education who wishes to have a single teaching field in French, German, Russian or Spanish must conform to the requirements of a language major.

In teacher education/certification programs students are advised to seek help from a faculty advisor from the Department of Foreign Languages and Literatures for the selection and approval of courses. Students are also advised to see total degree requirements under the Education section of the catalog.

French (FH)

101 Elementary French I 3 hrs.
Lab Fee: Level 3.
102 Elementary French II 3 hrs.
Lab Fee: Level 3. Prerequisite: FH 101 or placement.
201 Intermediate French I 3 hrs.
Lab Fee: Level 3. Prerequisite: FH 102 or placement.
202 Intermediate French II 3 hrs.
Lab Fee: Level 3. Prerequisite: FH 201 or placement.
301 French Conversation 3 hrs.
Oral drills, pronunciation exercises, and simple oral reports. Prerequisite: FH 202.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>302</td>
<td>Advanced French Composition</td>
<td>3 hrs.</td>
<td>Composition with emphasis on grammar review and idiomatic expression. Prerequisite: FH 202, or approval of instructor.</td>
</tr>
<tr>
<td>303</td>
<td>French for Business and Professions</td>
<td>3 hrs.</td>
<td>Reading and translation of materials, documents, and forms pertinent to commerce and professions. Prerequisite: FH 202 or approval of instructor.</td>
</tr>
<tr>
<td>304</td>
<td>French Culture</td>
<td>3 hrs.</td>
<td>Cultural patterns of French-speaking peoples. Prerequisite: FH 202 or approval of instructor.</td>
</tr>
<tr>
<td>305</td>
<td>Survey of French Literature I</td>
<td>3 hrs.</td>
<td>French literature from the medieval period through the eighteenth century. Prerequisite: FH 301, FH 302 or approval of instructor.</td>
</tr>
<tr>
<td>306</td>
<td>Survey of French Literature II</td>
<td>3 hrs.</td>
<td>French literature from 1800 to the present. Prerequisite: FH 301, FH 302 or approval of instructor.</td>
</tr>
<tr>
<td>403</td>
<td>Sixteenth Century French Literature</td>
<td>3 hrs.</td>
<td>Intellectual, philosophical, and aesthetic trends and developments in Renaissance France, using representative works of the period. Prerequisite: FH 305 or 306 or approval of instructor.</td>
</tr>
<tr>
<td>404</td>
<td>Seventeenth Century French Literature</td>
<td>3 hrs.</td>
<td>Masterpieces of the period with emphasis on the plays of Corneille, Racine, and Molière. Prerequisite: FH 305 or 306 or approval of instructor.</td>
</tr>
<tr>
<td>405</td>
<td>Eighteenth Century French Literature</td>
<td>3 hrs.</td>
<td>French thought and writing in le Siècle des Lumières. Representative works from Voltaire to Châniér. Prerequisite: FH 305 or 306 or approval of instructor.</td>
</tr>
<tr>
<td>406</td>
<td>Nineteenth Century French Novel</td>
<td>3 hrs.</td>
<td>Principal novelists of the nineteenth century: Balzac, Stendhal, Flaubert, Zola. Prerequisite: FH 305 or 306 or approval of instructor.</td>
</tr>
<tr>
<td>407</td>
<td>French Drama</td>
<td>3 hrs.</td>
<td>The most influential French dramatists from the nineteenth century to the present. Prerequisite: FH 305 or 306 or approval of instructor.</td>
</tr>
<tr>
<td>408</td>
<td>Twentieth Century French Novel</td>
<td>3 hrs.</td>
<td>The most influential French novelists from the beginning of the century to the present. Prerequisite: FH 305 or 306 or approval of instructor.</td>
</tr>
<tr>
<td>409</td>
<td>Famous Women Writers</td>
<td>3 hrs.</td>
<td>Famous feminine writers throughout French Literature: Madame de LaFayette, Madame de SçvignÇ, Madame de StaåÅl, Georges Sand, Collette, Francoise Sagan, Natalie Sarrute. Prerequisite: approval of instructor.</td>
</tr>
<tr>
<td>410</td>
<td>Practicum</td>
<td>3 hrs.</td>
<td>Student oral presentations, guest speakers, periodicals and brochures are utilized for instructional purposes. Prerequisite: FH 303 or approval of instructor.</td>
</tr>
<tr>
<td>499</td>
<td>Independent Studies</td>
<td>1-3 hrs.</td>
<td>Prerequisite: approval of department chair.</td>
</tr>
</tbody>
</table>

**German (GN)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Elementary German I</td>
<td>3 hrs.</td>
<td>Lab Fee: Level 3.</td>
</tr>
<tr>
<td>102</td>
<td>Elementary German II</td>
<td>3 hrs.</td>
<td>Lab Fee: Level 3. Prerequisite: GN 101 or placement.</td>
</tr>
</tbody>
</table>
Intermediate German I 3 hrs.
Lab Fee: Level 3. Prerequisite: GN 102 or placement.

Intermediate German II 3 hrs.
Lab Fee: Level 3. Prerequisite: GN 201 or placement.

German Conversation 3 hrs.
Oral practice, communication and reports, emphasizing topics of daily experiences, travels, and contemporary German life. Prerequisite: GN 202 or approval of instructor.

Advanced German Composition and Usage 3 hrs.
Composition with emphasis on grammar review and idiomatic expression. Prerequisite: GN 202 or approval of instructor.

German for Business and Professions 3 hrs.
Reading and translation of materials, documents, and forms pertinent to commerce and the professions. Prerequisite: GN 202 or approval.

German Culture 3 hrs.
German cultural patterns and historical context. Prerequisite: GN 202 or approval of instructor.

Survey of German Literature I 3 hrs.
German literature from its beginning to 1785. Prerequisite: GN 301 or GN 302 or approval of instructor.

Survey of German Literature II 3 hrs.
German literature from the end of the eighteenth century to the present. Prerequisite: GN 301 or GN 302 or approval of instructor.

Practicum 3 hrs.
Student oral presentations, guest speakers, periodicals and brochures are utilized for instructional purposes. Prerequisite: GN 303 or approval of instructor.

Goethe, Schiller and Other Major Writers of Eighteenth Century 3 hrs.
Contributions of Goethe and Schiller to German literature compared with significant works of other writers of the era. Prerequisite: GN 305 or 306 or approval of instructor.

German Romanticism 3 hrs.
German literature of the romantic period, its philosophy and theory. Prerequisite: GN 305 or 306 or approval of instructor.

The German “Novelle” from Goethe to Kafka 3 hrs.
Important literary genre using representative novellas of the nineteenth and twentieth centuries. Prerequisite: GN 305 or 306 or approval of instructor.

Twentieth Century German Literature 3 hrs.
Writers and works of the twentieth century with emphasis on post-World War II German literature. Prerequisite: GN 305 or 306 or approval of instructor.

Modern German Drama 3 hrs.
German drama from the nineteenth century to present showing development and diversity of modern German drama. Prerequisite: GN 305 or 306 or approval of instructor.

German Poetry 3 hrs.
Interpretation of selected masterpieces of major German poets from the seventeenth to the twentieth centuries. Prerequisite: GN 305 or 306 or approval of instructor.

Independent Studies 1 - 3 hrs.
Prerequisite: approval of department chair.
### Japanese (JE)

101 **Elementary Japanese I**  
Lab Fee: Level 3.  
3 hrs.

102 **Elementary Japanese II**  
Lab Fee: Level 3. Prerequisite: JE 101 or placement.  
3 hrs.

201 **Intermediate Japanese I**  
Lab Fee: Level 3. Prerequisite: JE 102 or placement.  
3 hrs.

202 **Intermediate Japanese II**  
Lab Fee: Level 3. Prerequisite: JE 201 or placement.  
3 hrs.

399 **Independent Studies.**  
Prerequisite: Approval of department chair.  
1-3 hrs.

### Latin (LN)

101 **Elementary Latin I**  
3 hrs.

102 **Elementary Latin II**  
Prerequisite: LN 101 or approval of instructor.  
3 hrs.

201 **Intermediate Latin I**  
Prerequisite: LN 102 or approval of instructor.  
3 hrs.

202 **Intermediate Latin II**  
Prerequisite: LN 201 or approval of instructor.  
3 hrs.

399 **Independent Studies.**  
Prerequisite: approval of department chair.  
3 hrs.

### Russian (RN)

101 **Elementary Russian I**  
Lab Fee: Level 3.  
3 hrs.

102 **Elementary Russian II**  
Lab Fee: Level 3. Prerequisite: RN 101 or placement.  
3 hrs.

201 **Intermediate Russian I**  
Lab Fee: Level 3. Prerequisite: RN 102 or placement.  
3 hrs.

202 **Intermediate Russian II**  
Prerequisite: RN 201 or placement. Lab Fee: Level 3.  
3 hrs.

301 **Russian Conversation**  
Prerequisite: RN 202 or approval of instructor.  
3 hrs.

302 **Advanced Grammar and Composition**  
Prerequisite: RN 202 or approval of instructor.  
3 hrs.

303 **Russian for Business and Professions**  
Reading and translation of materials, documents, and forms pertinent to commerce and the professions. Individualized instruction. Prerequisite: RN 202 or approval of instructor.  
3 hrs.

304 **Russian Culture**  
Russian cultural patterns: their causes and effects. Prerequisite: RN 202 or approval of instructor.  
3 hrs.

305 **Survey of Russian Literature I**  
Russian literature from its beginning to Pushkin. Prerequisite: RN 301 or RN 302 or approval of instructor.  
3 hrs.
### Survey of Russian Literature II
Russian literature from Pushkin to the present. Prerequisite: RN 301 or RN 302 or approval of instructor.

### Practicum
Student oral presentations, guest speakers, periodicals and brochures are utilized for instructional purposes. Prerequisite: RN 303 or approval of instructor.

### Major Writers of the Nineteenth Century
Representative works from Pushkin through Chekhov. Prerequisite: RN 305 or 306 or approval of instructor.

### Russian Poetry
Russian verse from its beginning to Pushkin. Examination of Russian literary-poetic language, with consideration of the role of Church Slavonic, regional dialects, and foreign influences as well as the contribution of particular authors. Prerequisite: RN 202.

### Gogol
Gogol’s major works, especially Dead Souls. An examination of his style, philosophy and technique. Prerequisite: RN 305 or 306 or approval of instructor.

### Dostoevsky
Major works by Dostoevsky, regarding style, ideology, philosophies, and technique. Prerequisite: RN 305 or 306 or approval of instructor.

### Independent Studies
Prerequisite: approval of department chair.

### Spanish (SH)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Elementary Spanish I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>102</td>
<td>Elementary Spanish II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>201</td>
<td>Intermediate Spanish I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>202</td>
<td>Intermediate Spanish II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>301</td>
<td>Spanish Conversation and Pronunciation</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>302</td>
<td>Advanced Spanish Grammar and Composition</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>303</td>
<td>Spanish for Business and Professions</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>304</td>
<td>Hispanic Culture</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>305</td>
<td>Survey of Spanish Literature I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>306</td>
<td>Survey of Spanish Literature II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>307</td>
<td>Survey of Spanish American Literature I</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>
Survey of Spanish American Literature II 3 hrs.
Spanish American literature beginning with “modernismo” to the “Boom”.

Practicum 3 hrs.
Student oral presentations, guest speakers, periodicals, and brochures are utilized for instructional purposes. Prerequisite: SH 305 or 306 or approval of instructor.

Cervantes 3 hrs.
Study of this famous writer and his extraordinary significance in Spanish literature. Prerequisite: One of SH 305,306,307,308, or approval of instructor.

Golden Age Drama 3 hrs.
Drama of the sixteenth and seventeenth centuries, with emphasis on the major dramatists: Lope de Vega, Tirso, and Calderon. Representative works. Prerequisite: One of SH 305,306,307,308, or approval of instructor.

Spanish American Novel 3 hrs.
Representative novels of the modern and contemporary period. Prerequisite: One of SH 305,306,307,308, or approval of instructor.

The Generation of ’98 3 hrs.
Major Spanish writers from the late nineteenth and early twentieth centuries. Prerequisite: One of SH 305,306,307,308, or approval of instructor.

Independent Studies 1-3 hrs.
Prerequisite: approval of department chair.

Health and Physical Education Program

Director: Dr. Joe Manjone

Activity Courses
Fitness, active participation, and good health habits are essential in modern society. Through health and physical education courses (HPE 100 through 199), the student has the opportunity to improve fitness, learn skills, and participate in a variety of activities, as well as gaining a conceptual knowledge of healthful practices. These courses carry one semester hour credit, and no more than six hours may be counted toward graduation. A varsity athlete will not receive credit counting toward graduation when enrolled in a regular activity course in that sport. Courses may not be repeated for credit except for varsity sports credit. Grades of satisfactory (S) or unsatisfactory (U) are given, based primarily on a student’s improvement in skill rather than on the level of ability.

Professional Training Courses
These courses (HPE 200 through 500) provide professional training in aspects of health, physical education or related fields. Many of these courses meet certification standards with certificates awarded upon satisfactory completion. They require both skills and academic training. Normal letter grades (A through F) and other academic standards apply to such courses.

Health and Physical Education (HPE)
Activity Courses
100  Fitness Enhancement. Lab Fee: Level 1. 1 hr.
101  Slimnastics. Lab Fee: Level 1. 1 hr.
102  Aerobic Dance I. Lab Fee: Level 1. 1 hr.
103  Jogging for Fitness and Weight Control. Lab Fee: Level 1. 1 hr.
104 Beginning Weight Training. Lab Fee: Level 1. 1 hr.
105 Beginning Karate. Lab Fee: Level 1. 1 hr.
106 Beginning T'ai Chi. Lab Fee: Level 1. 1 hr.
107 Beginning Stunts and Tumbling. Lab Fee: Level 1. 1 hr.
108 Yoga. Lab Fee: Level 1. 1 hr.
109 Bicycle Touring. Lab Fee: Level 1. 1 hr.
110 Beginning Swimming. Lab Fee: Level 2. 1 hr.
111 Swimnastics. Lab Fee: Level 1. 1 hr.
112 Deep Water Workout. Lab Fee: Level 1. 1 hr.
113 Basic Sailing. Lab Fee: Level 4. 1 hr.
114 Sailboat Cruising. Lab Fee: variable. 1 hr.
115 Badminton. Lab Fee: Level 1. 1 hr.
116 Racquetball. Lab Fee: Level 1. 1 hr.
117 Beginning Tennis. Lab Fee: Level 1. 1 hr.
118 Bench Stepping. Lab Fee: Level 1. 1 hr.
119 Windsurfing. Lab Fee: Level 3. 1 hr.
120 Roller Skating. Lab Fee: Level 1. 1 hr.
121 Ice Skating. Lab Fee: Level 4. 1 hr.
122 Social Dance. Lab Fee: Level 1. 1 hr.
124 Backpacking. Lab Fee: Level 2. 1 hr.
125 Basic Horseback Riding. Lab Fee: Level 12. 1 hr.
(all-weather indoor arena available.)
126 Beginning Golf. Lab Fee: Level 6. 1 hr.
127 Beginning Bowling. Lab Fee: Level 3. 1 hr.
128 Speleology. Lab Fee: Level 1. 1 hr.
129 Snow Skiing. Lab Fee: Variable. 1 hr.
130 Basketball. Lab Fee: Level 1. 1 hr.
131 Volleyball. Lab Fee: Level 1. 1 hr.
132 Softball. Lab Fee: Level 1. 1 hr.
133 Soccer. Lab Fee: Level 1. 1 hr.
136 Jazz Dance. Lab Fee: Level 1. 1 hr.
137 Intermediate Jazz Dance. Lab Fee: Level 1. 1 hr.
138 Fencing. Lab Fee: Level 4. 1 hr.
139 Hang Gliding Fundamentals. Lab Fee: Level 1. 1 hr.
140 Intermediate Ice-Skating. Lab Fee: Level 4. 1 hr.
141 Intermediate Swimming. Lab Fee: Level 2. 1 hr.
142 Intermediate Karate. Lab Fee: Level 1. 1 hr.
143 Intermediate Tennis. Lab Fee: Level 1. 1 hr.
144 Intermediate Racquetball. Lab Fee: Level 1. 1 hr.
145 Intermediate Swimnastics. Lab Fee: Level 1. 1 hr.
146 Intermediate Stunts and Tumbling. Lab Fee: Level 1. 1 hr.
147 Intermediate Golf. Lab Fee: Level 6. 1 hr.
149 Aerobic Dance II. Lab Fee: Level 1. 1 hr.
150 Intermediate Sailing. Lab Fee: Level 4. 1 hr.
151 Advanced Tennis. Lab Fee: Level 1. 1 hr.
152 Advanced Karate. Lab Fee: Level 1. 1 hr.
153 Advanced Swimnastics. Lab Fee: Level 1. 1 hr.
154 Advanced Racquetball. Lab Fee: Level 1. 1 hr.
155 Ballet. Lab Fee: Level 1 1 hr.
156 Advanced Weight Training. Lab Fee: Level 1. 1 hr.
Advanced Bowling. Lab Fee: Level 3. 1 hr.
Aerobic Dance III. Lab Fee: Level 1. 1 hr.
Intermediate T'ai Chi. Lab Fee: Level 1. 1 hr.
Water-Safety Instruction. Lab Fee: Level 2. 1 hr.
Horseback Riding II-Field Riding. Lab Fee: Level 12. 1 hr.
Basic Shooting. Lab Fee: Level 3. 1 hr.
Intermediate Weight Training. Lab Fee: Level 1. 1 hr.
Intermediate Social Dance. Lab Fee: Level 1. 1 hr.
Basic Rowing. Lab Fee: Level 1. 1 hr.
Varsity Sports - Basketball. Lab Fee: Level 1. 1 hr.
Varsity Sports-Soccer. Lab Fee: Level 1. 1 hr.
Varsity Sports-Crew. Lab Fee: Level 1. 1 hr.
Varsity Sports-Tennis. Lab Fee: Level 1. 1 hr.
Varsity Sports-Ice Hockey. Lab Fee: Level 1. 1 hr.
Varsity Sports-Volleyball. Lab Fee: Level 1. 1 hr.
Varsity Sports-Golf. Lab Fee: Level 1. 1 hr.
Varsity Sports-Cross Country. Lab Fee: Level 1. 1 hr.
Varsity Sports-Athletic Training. Lab Fee: Level 1. 1 hr.
Special Topics in Health and Physical Education. Lab. Fee: Variable. 1 hr.

Professional Courses

Basketball Officiating 2 hrs.
Techniques, mechanics, and rules involved in officiating basketball for certification as an Alabama high school official. Experience and skill necessary to officiate basketball on elementary, secondary, and recreational levels.

Football Officiating 2 hrs.
Techniques, mechanics, and rules involved in officiating football for certification as an Alabama high school official. Experience and skills necessary to officiate football on elementary, secondary, and recreational levels.

Baseball and Softball Officiating 2 hrs.
Baseball and softball officiating techniques, mechanics, and rules for certification as an Alabama high school baseball official and an Amateur Softball Association umpire. Experience and skills necessary to officiate baseball and softball on various interscholastic and recreational levels.

Soccer Officiating 2 hrs.
Techniques, mechanics, and rules involved in the officiating of soccer. Experience and skills necessary to officiate soccer on elementary, secondary, and recreational levels. Lab Fee: Level 1.

Scuba 2 hrs.
Basic skills, theories, techniques, and fundamentals of scuba-diving introduced, practiced, and refined. Open water diving. Scuba certification upon successful completion of course. Prerequisite: Instructor approval. Lab Fee: Level 5.

Advanced Scuba 1 hr.
Lecture and dives necessary to earn a YMCA-Silver Star Water Rating. Lab Fee: TBA.

Lifeguard Training 2 hrs.
Certification as a Red Cross approved lifeguard upon successful completion of classroom and in-water instruction and testing. Lab Fee: Level 2

Private Pilot Ground School 3 hrs.
Prepares student for FAA Private Pilot written examination. Provides student with necessary knowledge to progress into primary pilot flight training. Lab Fee: Level 1.
Instrument Flying: Ground School 3 hrs.
Provides student with knowledge needed for instrument flight instruction air training. Preparers student for FAA Instrument Flying Examination. Prerequisite: FAA Private Pilot Rating. Lab Fee: Level 4.

History and Principles of Physical Education 3 hrs.

Care and Prevention of Athletic Injuries 3 hrs.
Knowledge and techniques necessary to prevent and/or care for the common athletic injuries. For coaches, athletes, parents and those working in recreation, physical education, or athletics. Lab Fee: Level 2.

CPR Instructor 1 hr.
Basic techniques cardiopulmonary resuscitation, and methods of teaching these skills to others. An American Heart Association certificate is awarded. Lab Fee: Level 3.

Contemporary Nutrition for Today's Lifestyle 1 hr.
Broad spectrum of nutritional topics. Nutritional philosophy, health hazards, dietary regimes. Lab fee: Level 1.

Field Work in Athletics, Physical Education, or Leisure Services 2 hrs.
Planned supervised 80-hour work experience with a physical education, athletic, or leisure service program. Written reports, a major project, and final oral report are required. Lab Fee: Level 1.

Boating Safety 3 hrs.
Techniques for teaching boating safety to elementary and secondary students. The Alabama Better Boating Home-Study Course, The Alabama Young Boatmen’s Program, and water skiing safety will be stressed. Instructor’s rating in boating safety will be awarded upon successful completion. Lab Fee: Level 1.

History Department

Professors Boucher, Ellis, Shields (Chair), C. White; Professor Emerita Roberts; Professor Emeritus J. White; Associate Professors Dunar, Gerberding, Severn, Williams; Associate Professor Emerita Parker; Assistant Professors Patton, Waring.

The Department of History offers the B.A. and M.A. degrees in history, and a minor in history. The M.A. degree program is described in the Graduate Catalog.

History Major

A student majoring in history must include in the academic program a minimum of 33 semester hours in history beyond HY 101-102 (GER). The U.S. survey courses, HY 221-222 are required. A student is required to take an additional 3 semester hours of sophomore work, but may take no more than a total of 12 semester hours in 200 level work including HY 221-222. A history major must take a minimum of 21 semester hours in courses numbered 300 or above; 9 semester hours must be 400-level courses, and must include HY 490. A history major is required to take a minimum of 6 semester hours in American history beyond HY 221 and 222 and a minimum of 6 semester hours in non-American history excluding HY 101-102 (GER). Students are encouraged to complete as many upper division courses as possible before enrolling in HY 490.
History students may also pursue an already approved and published composite major such as the Slavic Area Studies Program. As currently established, a composite major consists of a minimum of 36 semester hours, 24 of which must be upper division. In the Slavic Area Studies Program, history contributes six courses including HY 101-102 (GER), three of which must be upper division and include HY 490.

A student majoring in history will find a variety of programs of study enabling one to develop depth and breadth in history and some related areas from the other humanities, the social sciences, mathematics, and the natural sciences. Counseling is available in the History Department for programs of study including the following: graduate school preparation, general, preprofessional and prelaw preparation, international studies, secondary school teaching, and the fine arts. A student who wishes to plan an individual program of study can do so through a history advisor and with the coordination of the department chair.

**History Minor**

A student interested in establishing a history minor should include appropriate history courses involving a minimum of 21 semester hours beyond HY 101-102 (GER) and including 12 semester hours in courses numbered 300 or above. The minor program must have the approval of the History Department Chair. Appropriate history courses may also form a part of an area of cognate studies with other disciplines to support another major program. Such a program must be approved by the student's major department and must meet the requirement of a minimum of 12 upper division semester hours, of which 9 hours must be in history.

**History for Second Area of Study**

Students majoring in elementary education may select history as their second area of study. Major requirements can be found in the Education section of the catalog. Preliminary counseling is available in the Department of Education.

**Advanced Placement Credit**

Elective credit will be given to AP American History students who have earned a score of 5 on Advanced Placement (AP) Program examinations of the College Entrance Examination Board. This credit may be used in substitution for HY 221 and HY 222 at UAH. Under no circumstances may AP American History be used as a substitute for HY 101 and/or HY 102. Credit for the AP European History course (1470-Present) will be awarded to students who earn a score of 5 on the AP examination, and this credit may be used as a substitute for HY 102 only. A maximum of 3 hours credit will be granted for this examination. In order to fulfill GER requirements, such students will still have to take HY 101 or its equivalency as approved by the department.

**History (HY)**

101 Origins and Development of the Contemporary World, Part I 3 hrs.
Major western civilizations to 1500. Taught every term.

102 Origins and Development of the Contemporary World, Part II 3 hrs.
Major western civilizations since 1500. Taught every term.

Courses below are open to all students other than beginning freshmen, with exceptions as indicated.

202 Current World Issues in History 3 hrs.
Selected topics in world history during the twentieth century designed to foster a historical awareness of present day problems.
221 The United States to 1877 3 hrs.
Discovery of America through the Civil War and Reconstruction.

222 The United States Since 1877 3 hrs.
United States from the end of the Civil War era to the present.

225 History of Alabama 3 hrs.
The state's past from colonial times to the present with emphasis on its place in United States history.

229 Survey of Ancient Times 3 hrs.
Ancient Near East, Greece, and Rome. Prerequisites: HY 101-102 or approval of instructor.

230 The Rise of Medieval Civilizations 3 hrs.
Survey of the origins and development of the medieval world, with attention given to Byzantium and the Islamic world, as well as to the Latin west. Prerequisites: HY 101 and 102 or permission of instructor.

Courses listed below are open to students who have completed 12 semester hours in history or have junior standing.

318 Constitutional History of the U.S. to 1877 3 hrs.
Origins of the American constitutional system with an emphasis on its underpinnings in the English past and the American colonial period, the drafting and ratification of the Constitution, and the early development of institutions and doctrine.

319 Constitutional History of the U.S. Since 1877 3 hrs.
Development of constitutional institutions and doctrine from the Age of Industrialization to the present, with a focus on the regulation of commerce, the rule of government, and the emergence of modern civil rights doctrine.

329 Imperial Rome 3 hrs.
Roman Empire from the Principate to the barbarian invasions.

341 Modern France 3 hrs.
Political, economic, social, and cultural developments from the opening of the reign of Louis XIV to the post-de Gaulle era of the Fifth Republic. Prerequisites: HY 101-102.

343 Modern Germany 3 hrs.
German history from unification (1870) to re-unification (1990), focusing on the origins and evolution of German nationalism, the struggle between conservative and liberal forces in German society, and Germany's role in international affairs, especially in the World Wars and the Cold War. Prerequisites: HY 101 and 102.

347 English History to 1660 3 hrs.
English history and society from Anglo-Saxon times to the Restoration with attention to the origins and evolution of governmental and legal institutions such as monarchy, common law, parliament, and the judiciary. Prerequisites: HY 101 and 102.

348 English History since 1660 3 hrs.
Impact of revolution, industrialization and war on English society, the expansion of English liberties, and the development of the cabinet, political parties, the empire and the welfare state. Prerequisites: HY 101 and 102.

364 The Westward Movement in American History since 1803 3 hrs.
Pioneering society, Indian relations, land policies, expansion, and politics of the trans-Mississippi frontier.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>365</td>
<td>American Labor History</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>American labor relations from colonial times but concentrating on post-Civil War topics. Emphasis will be given to changes in macro-economic policy, management, and the organization of work.</td>
<td></td>
</tr>
<tr>
<td>366</td>
<td>Blacks in Twentieth Century America</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Interrelationship of the African-American and the industrial-urban environment of the United States.</td>
<td></td>
</tr>
<tr>
<td>369</td>
<td>Social and Cultural History of the United States to 1865</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Major themes in the development of American culture and society from the colonial period to the Civil War era.</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>Social and Cultural History of the United States since 1865</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Major themes in American culture and society since the Civil War.</td>
<td></td>
</tr>
<tr>
<td>373</td>
<td>Foreign Relations of the United States to 1900</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>American foreign relations from the Revolutionary era to the emergence of the United States as a world power. American territorial and commercial expansion and relations with the European powers.</td>
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</tr>
<tr>
<td>374</td>
<td>Foreign Relations of the United States since 1900</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>United States as a world power. American involvement in both World Wars, the development of the Cold War, and the growth of American presence in Asia and Latin America.</td>
<td></td>
</tr>
<tr>
<td>375</td>
<td>Imperial Russia</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Russian history from Peter the Great (1689) to World War I, focusing on the emergence of Russia as a great power and the social-political crises stemming from serfdom and autocracy. Prerequisites: HY 101 and 102.</td>
<td></td>
</tr>
<tr>
<td>376</td>
<td>Soviet Russia</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Russian history from the collapse of autocracy to the collapse of communism with special emphasis on the revolutions of 1917, the formation and evolution of the Soviet state in the 1920’s and 30’s, and the successes and failures of the post-1945 era. Prerequisites: HY 101 and 102.</td>
<td></td>
</tr>
<tr>
<td>391</td>
<td>Europe, 1500-1815</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Examination of the economic, scientific, social, political, and cultural developments in Europe from the Renaissance to the close of the Napoleonic Wars.</td>
<td></td>
</tr>
<tr>
<td>392</td>
<td>Europe Since 1815</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Europe from the end of the Napoleonic Wars to the present with equal emphasis on the nineteenth and twentieth centuries.</td>
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<tr>
<td>399</td>
<td>Special Topics in History</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Intensive examination of particular problems, periods, or topics in history.</td>
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</tbody>
</table>

Courses listed below are open to students who have completed 15 semester hours in history or 12 semester hours in history with senior standing.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>413</td>
<td>The Old South</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Southern society, economics, politics and culture concentrating on the nineteenth century south through Reconstruction.</td>
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</tr>
<tr>
<td>414</td>
<td>The New South</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Post-reconstruction south emphasizing the economic, social, and political readjustments made during the twentieth century.</td>
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</tr>
<tr>
<td>424</td>
<td>The Atlantic World</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Comparative survey of the western European colonial empires from 1450 to 1763, emphasizing the cultural interactions of African, Amerindian and European peoples</td>
<td></td>
</tr>
</tbody>
</table>
in the Americas. This course meets the requirements for either American or non-American credit in the history major.

426 Colonial America 3 hrs.
Development of political, religious, and economic institutions in the United States, 1607-1763.

427 The Age of the American Revolution 3 hrs.
Political, economic, military, social, and cultural developments in the revolutionary period of American history, 1763-1789.

428 The Early American Republic 3 hrs.
Political, social, and economic changes in the United States and its sections from the adoption of the Constitution to the Compromise of 1850.

437 The Transformation of the American Republic 3 hrs.
Nationalization and modernization of the United States from the period of the Civil War through the Populist movement.

438 Modern America 3 hrs.
American society focusing on social and cultural change, reform, imperialism, and economic trends from the depression of the 1890's to the outbreak of World War II.

439 Recent American History 3 hrs.
Contemporary America from World War II to the present, analyzing both domestic and foreign affairs.

473 The High Middle Ages 3 hrs.
Political, economic, and cultural features of Europe when medieval civilization was at its height.

474 The Renaissance and Reformation 3 hrs.
Selected topics in the Italian Renaissance and European Reformation.

475 Crisis in Europe, 1560-1660 3 hrs.
Europe in an age of anxiety, religious wars, political upheaval, witch-hunts, and the early scientific revolution.

476 Absolutism and Enlightenment, 1660-1763 3 hrs.
Europe from Louis XIV to the Peace of Paris, an age of political stability and intellectual innovation.

477 The French Revolution and Napoleon 3 hrs.
European ideas, institutions, and events from the beginning of the French Revolution to the demise of the Napoleonic Empire.

478 Europe in the Nineteenth Century 3 hrs.
Major political, social, economic, and intellectual developments in Europe from the Congress of Vienna to World War I.

479 Europe in the Twentieth Century 3 hrs.
Major developments in Europe from 1914 to the present, including the two World Wars and post-war reconstruction.

490 Research Seminar in History 3 hrs.
Historiography, research and writing, and recent interpretations in the field of history. Required of all history majors. Taught in winter term annually.
Music Department

Professors Boyer, Pales; Associate Professor Graves (chair); Assistant Professors Contreras, Sanders, Sneed; Adjunct Lecturer Weaver.

The Department of Music, which offers the B.A. in music and in music education, has two principal curricular goals: to provide a quality major in music which prepares students who wish to become public or private teachers, church musicians, or who wish to pursue graduate studies in music. The major is also suitable for students who have not established specific professional aspirations, but who desire a liberal arts education.

The curriculum for music majors is designed to provide students with knowledge of their musical heritage and the great masterworks of music literature, a foundation in theoretical studies and musical skills sufficient to allow them to deal intelligently with music, and performance experiences which develop technical skill and artistic sensitivity. Additional offerings will provide music education students with knowledge of the appropriate materials, teaching strategies and organizational skills necessary to become successful public school teachers.

All the department’s programs are strongly based in the liberal arts, in the belief that a broad general education is an appropriate preparation for both the well-rounded musician and the educated individual.

Courses for the General Student (Non-Music Majors)

The following courses and ensembles are open to all university students; many require little or no musical experience. Upper-level credit is available for some courses. Students may receive studio instruction (private lessons) in voice and in nearly every musical instrument.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>MU 100</td>
<td>Fundamentals of Music</td>
</tr>
<tr>
<td>MU 110</td>
<td>Introduction to Music Listening</td>
</tr>
<tr>
<td>MUE 215</td>
<td>Music for the Young Child</td>
</tr>
<tr>
<td>MU 310</td>
<td>American Music</td>
</tr>
<tr>
<td>MU 410</td>
<td>Music in Western Civilization</td>
</tr>
<tr>
<td>MU 190/390</td>
<td>UAH Choir</td>
</tr>
<tr>
<td>MU 199/399</td>
<td>UAH Wind Ensemble</td>
</tr>
<tr>
<td>MU 290</td>
<td>Opera/Music Theatre Workshop</td>
</tr>
<tr>
<td>MU 296</td>
<td>Pep Band</td>
</tr>
<tr>
<td>MU 297</td>
<td>Jazz Ensemble</td>
</tr>
</tbody>
</table>

Music Major

The major in music, with emphasis in either performance, church music, or music literature, is a degree program of 134 credit hours. To minimize degree hours, a music major should choose a minor from the disciplines represented in GER. Students with dual interests and abilities will find many opportunities for combining the music major with other disciplines.

Music Education Major

The major in music education is a 152 credit hour degree program built upon a broad liberal arts base. The course of study integrates music and professional education courses to develop a superior music teacher, certified to teach at all levels N-12 (Class B Professional Teacher’s Certificate) with strength in either vocal or instrumental music. Students must demonstrate throughout their course of study competencies in both performance and teaching. Because of the demands of this program, there is little opportunity to elect courses other than those required and outlined below. With additional study of the principal instrument and a senior recital performance, music education students are eligible to receive a special performance certificate. Faculty approval is required.
Bachelor of Arts in Music and Music Education

Students wishing to pursue a music major should have pre-college training in their principal performing instrument or voice and have ability to read music fluently. Basic keyboard ability is helpful but not mandatory.

Entering freshmen and transferring students are required to take a placement examination in rudiments (scales, keys, intervals, triads, general notation), music reading and performance (principal instrument or voice). Deficiencies may be removed through remedial instruction.

I. General Education Requirement 66-72 hrs.

GER for the B.A. degree are listed in the Academic Information section. The student should include MU 110 to fulfill the fine arts option. Music education students must include ED 230, ED 263, ED 510 and at least one course in economics for the social science requirement; other music majors should choose at least one course in philosophy. Music education students must also include three hours of HPE courses (including HPE 294 and two activity courses), and should fulfill the upper division Humanities/Fine Arts requirement with MU 312.

II. Major (select A or B)

A. Music Maximum 56 hrs

Major
MU 1-1/4-3 Principal Instrument* (12 terms; 6 hours upper level) .................. 12
MU 1-0/2-0 Secondary Instrument** (6 terms) .............................................. 3
MU 101, 102, 301, 302, 303 Theory-Harmony ........................................... 10
MU 103, 104, 304, 305, 306 Musicianship Skills .......................................... 5
MU 110 Introduction to Music Listening
(include in GER) ......................................................................................... 3
MU 311, 312 Music History ........................................................................... 6
MU 325 Conducting ...................................................................................... 2
Ensembles*** ............................................................................................... 6
Junior recital .................................................................................................. 0
Senior recital .................................................................................................. 0

Minor
Selected minor from a discipline represented in the GER.

B. Music Education Emphasis
(Composite Major-Minor) Maximum 77 hrs.

Music Performance, Theory, and Literature
MU 1-0/4-0 Principal Instrument (10 terms; 4 hours upper level) ................. 10
Junior recital (solo and ensemble works) ....................................................... 0
Secondary instrument(s): (6 terms) .............................................................. 3-6
Voice principals elect piano, MU 130-230
Piano principals elect voice, MU 140-240

Instrument principals elect the following courses:
Percussion, MU 184
Strings, MU 154, 254
Woodwinds, MU 164, 264
Brasses, MU 174, 274 (one course to be deleted in principal instrument area)

Ensembles*** ............................................................................................... 7-10
(Combined secondary and ensembles must be 13 hrs.)
MU 101, 102, 301, 302, 303 Theory-Harmony .......................................................... 10
MU 103, 104, 304, 305, 306 Musicianship Skills .................................................. 5
MU 110 Introduction to Music Listening (GER) ...................................................... 3
MU 311, 312 Music History (include 312 in GER) ................................................ 6
MU 416 Orchestration .......................................................................................... 2
MU 325 Conducting .............................................................................................. 2
MU 425 Advanced Conducting ............................................................................ 2

Music Education
MUE 225 Introduction to Music Education .......................................................... 1
MUE 326 Teaching General Music in Elementary Schools .............................. 3
MUE 327 Teaching General Music in Secondary Schools ................................ 3
MUE 428 Organizing and Directing Vocal Groups in Secondary Schools or
MUE 429 Organizing and Directing Instrumental Groups in Secondary Schools .................................................. 2

Professional Education
ED 200 Introduction to Education ....................................................................... 1
ED 230 Human Development (GER) .................................................................. 3
ED 261 Foundations of Education in U.S ............................................................. 3
ED 263 Educational Psychology (GER) ............................................................... 3
ED 408 Teaching Reading in the Secondary School ........................................... 3
ED 490 Principles of High School Teaching ....................................................... 3
ED 499 N-12 Internship**** ............................................................................... 9
ED 510 Foundations of Educational Evaluation (GER) .................................... 3
ED 593 Education of Exceptional Children and Youth ........................................ 3

*Students electing the music literature or church music emphasis will be limited to 8 hours rather than 12 hours of studio instruction. Four hours of appropriate upper-level music literature and history courses replace studio work. For the church music emphasis, this four hours will include MU 415, MUE 428, and MU 412. MU 315 replaces MU 311 in the church music program. Other special projects replace junior and senior recitals.

**All or part of the secondary requirement may be satisfied by examination. In the church music emphasis, some organ study may be substituted for piano.

**Students must complete a minimum of twelve terms of small or large ensemble experiences; however, a maximum of 6 hours may count towards the degree (10 in the music education emphasis).

****Students must pass a piano competency examination before internship. ED 490 must be taken concurrently with internship.

Music Minor
Students may select music as a supportive minor to their major discipline. A selection of combinations with majors in other disciplines is on file in the Music Department, or students may formulate their own with approval of representative faculty advisors from departments involved. Generally 24 of music are necessary (12 hours upper-level), including the following courses:
MU 1-0/2-0 Studio Instruction .............................................................................. 3
MU 101, 102, 301 Theory-Harmony ..................................................................... 6
MU 103, 104, 304 Musicianship Skills ................................................................ 3
MU 110 Introduction to Music Listening (include in GER) ............................... 3
MU 312 History of Music II ............................................................................... 3
Ensemble (300 level) ......................................................................................... 6
Music for Second Area of Study

Students majoring in elementary education may select music as their second area of study. See major requirements in Education section. Twenty-four hours in music are required:

MU 101, 102, 301 Theory of Music ......................................................... 6
MU 103, 104, 304 Musicianship Skills .............................................. 3
MU 110 Introduction to Music Listening ............................................. 3
MU 310 American Music ................................................................. 3
MU 312 Music History II ................................................................. 3
MUE 326 Teaching General Music in Elementary School ................. 3
(Replacement for MUE 215 in the GER)
Ensembles (at 300 level) ............................................................... 3

Music (MU)

100 Fundamentals of Music ............................................................. 3 hrs.
Basic music presented in a practical way for students who have little or no musical training. Mechanical aspects of music/clefs, notation, scales, intervals, 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.

101 Theory of Music I ...................................................................... 2 hrs.
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 103) to be taken concurrently throughout theory program. Prerequisite: approval of instructor or department chair.

102 Theory of Music II ..................................................................... 2 hrs.
Continuation of MU 101. Prerequisites: MU 101 and 103.

103 Musicianship Skills I ................................................................. 1 hr.
To be taken concurrently with MU 101 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. Prerequisite: approval of instructor or department chair.

104 Musicianship Skills II ............................................................... 1 hr.
Continuation of MU 103. Prerequisites: MU 101 and 103.

106 Introduction to Computers in Music .......................................... 1 hr.
Introduction to the utilization of computers in music, including the fundamentals of sound synthesis. Emphasis on practical applications of hardware and software in the study of music and skills development. One class period and one lab weekly.

110 Introduction to Music Listening .................................................. 3 hrs.
Basic music appreciation. Exploration of ideas and issues in various types of western music through reading, listening and discussion.

111 Popular Music in America: Beginnings to 1950 ......................... 3 hrs.
Basic appreciation course. Folk and jazz (including blues, ragtime, and Dixieland) in the last century. Related socio-economic, demographic, and technological factors.

112 Popular Music in America: 1950 to the Present ......................... 3 hrs.
Basic appreciation course. History of rock and roll, with some time devoted to folk music and jazz of the period. Related socio-economic, demographic, and technological factors, with extra emphasis on the decade of the 1960's.
Music with the Maestro 3 hrs.
Survey of music masterpieces, (e.g. Beethoven’s “5th Symphony,” Stravinsky’s “Firebird Suite,” works of J.S. Bach). Focus on live experiences with music and musicians. Classes with live performances, records, films, and informal discussion with musicians. Offered only on demand.

Theory of Music III 2 hrs.
Continuation of studies on a more advanced basis than MU 101-102. Prerequisites: MU 102 and 104.

Theory of Music IV 2 hrs.
Continuation of MU 301. Prerequisites: MU 301 and 304.

Theory of Music V 2 hrs.
Continuation of MU 302, with emphasis on twentieth century materials. Prerequisites: MU 302 and 305.

Musicianship Skills III 1 hr.
Continuation of MU 104. Prerequisites: MU 102 and 104.

Musicianship Skills IV 1 hr.
Continuation of MU 304. Prerequisites: MU 301 and 304.

Musicianship Skills V 1 hr.
Continuation of MU 305. Prerequisites: MU 301 and 305.

Analysis of Musical Form 2 hrs.
Analysis for structure and form of representative small and large compositions of the sixteenth through the twentieth centuries. Prerequisites: MU 110 and 303 or approval of instructor.

American Music 3 hrs.
Designed for the non-music major. Important aspects of American musical art are presented, including the colonial period, folksong and European influences, jazz, Broadway and film scores. The contemporary period, beginning with Charles Ives, is also covered.

History of Music I 3 hrs.
Development of music as an art in western civilization to 1750. Representative musical works and style. Understanding of musical concepts in view of their historical background. Prerequisites: MU 110 and 301, or approval of instructor.

History of Music II 3 hrs.
Music as an art in western civilization from 1750 to the present. Formal and stylistic problems through representative works and an understanding of musical concepts in light of their historical and general cultural context. Prerequisites: MU 110 and 301, or approval of the instructor.

Survey of a Musical Form 3 hrs.
A musical form (e.g., concerto, opera, etc.) from its origins to present time. Variable topics. Prerequisites: MU 303 and 311 or 312.

Biographical Survey 3 hrs.
Life and work of great composers. Variable topics. Prerequisites: MU 303 and 311 or 312.

History of Music in Liturgy 3 hrs.
Beginning with pagan, eastern and Hebraic sources, music in liturgical worship is traced to the present. Choral and organ music is studied for its practical usage and artistic value. Special attention is given to monumental works from the Medieval, Renaissance, Baroque, Classical, Romantic and Contemporary periods. Prerequisites: Junior standing, MU 110 and 301.
Piano Pedagogy  2 hrs.
Materials, techniques, and practices in teaching beginners and students through lower advanced grades of piano. Practical experience. Prerequisite: approval of instructor. Offered upon demand.

Piano Technology  1 hr.
Development of keyboard instruments, use of equal-temperament tuning, and minor piano action regulation and repair. Prerequisite: Ability to read music and familiarity with keyboard. Offered upon demand.

Conducting  2 hrs.
Basic techniques of choral and instrumental conducting. Prerequisites: MU 301 or approval of instructor.

Twentieth Century Materials and Techniques  3 hrs.
Systems of tonal organizations, compositional procedures, terminology, and analytical methods that relate to music of our century. Prerequisites: MU 303 and 312 or approval of instructor.

Music in Western Civilization  3 hrs.
Major musical masterpieces and personalities, with some emphasis on the effects of social, economic and political events on the evolution of musical style, form and performance media. Visual and literary arts are referenced and included in the readings, study and discussion. Prerequisites: MU 110, Junior standing or permission of instructor.

Musicum Practicum  1 hr.
Courses of study and activity developed by the student and submitted to music faculty for approval. Projects to reinforce learning and performance experiences. May be repeated, but no more than two hours count toward degree requirements.

Church Music Practicum  0 hr.
Forty hours working with selected professional church musicians in the community. An internship providing hands-on experiences in real church situations. Supervised by music faculty. Prerequisites: senior standing, MU 315 and MU 415. Lab Fee: Level 7.

Church Music Methods  2 hrs.
Practical approach preparing the church musician in choral and organ methods, liturgical planning, pastoral relations, and professional standards and goals. Prerequisites: MU 303 and MUE 326.

Orchestration  2 hrs.
Instruments of the band and orchestra, their ranges, transpositions, and capabilities. Practical experience in arranging for instruments. Prerequisite: MU 303.

Piano Literature  2 hrs.
Music for string keyboard instruments from the pre-pianoforte period to the present. Representative works from all periods. Prerequisites: MU 303, 306, 312 or approval of instructor.

Advanced Conducting  2 hrs.
Review of basic conducting patterns. Emphasis on communication as the role of the conductor. Detailed score preparation. Prerequisite: MU 325.

Concert Band Literature and Conducting Critique  3 hrs.
Literature for concert band and wind ensemble. Variety of music (type, style, and difficulty) as well as in-depth study of a few scores by each student for critiques of rehearsal and conducting techniques. UAH Summer Band serving as reading and laboratory ensemble. Prerequisite: MU 425; or approval of instructor.

Master Class in Piano Literature and Pedagogy  2 hrs.
Topic of course varies. Examination of selected forms.
Studio Instruction In Vocal and Instrumental Music

Students must fill out a “Request for Studio Instruction” card in the Music Department prior to each term they are enrolled. Transfer students who plan to take studio instruction for music credit must demonstrate their level of proficiency to the instructor before registration. Instruction varies from 30 to 50 minutes weekly.

Generally, students not intending to major in music should enroll in MU 130, 140, 150, 160 or 170, however, advanced students may enroll in MU 131, 141, etc., with permission of the instructor. A special studio instruction fee is charged (see Fees).

To advance to the next 100 level of studio instruction (i.e. from 133 to 231 or 130 to 230), each student must perform before a faculty jury. The jury may retain students at any level until proper achievement is reached for advancement or completion of degree performance competencies. The instructor’s grade may be raised or lowered one letter to reflect jury performance. Non-majors may enroll in studio instruction as long as the instructor agrees that satisfactory progress is made; no jury is necessary.

Students taking studio instruction must attend performances, the monthly student recital program and special performance classes. A student may be excused only with written permission of the department chair. As a part of studio instruction, students enrolled as full-time music majors must attend at least six approved concerts a term; other enrolled students must attend three. Prerequisites for each studio course include approval of the instructor and (for 200, 300, and 400 level courses) the previous 100 level of instruction.

Numbering System. Courses which have numbers ending in 1, 2, or 3 are generally for music majors’ principal instrument, although other advanced students may enroll for these courses through departmental audition. Courses ending in 0 are for non-majors, minors and music majors’ secondary instrument.

130, 230, 330, 430
Studio Instruction in Keyboard (piano and organ).
Studio instruction fee: Level 7.

131, 132, 133, 231, 232, 233, 331, 332, 333, 431, 432, 433
Studio Instruction in Keyboard (piano and organ).
Studio instruction fee: Level 9.

140, 240, 340, 440
Studio Instruction in Voice.
Studio instruction fee: Level 7.

141, 142, 143, 241, 242, 243, 341, 342, 343, 441, 442, 443
Studio Instruction in Voice
Studio instruction fee: Level 9.

150, 250, 350, 450
Studio Instruction in Strings (orchestral strings and guitar).
Studio instruction fee: Level 7.

151, 152, 153, 251, 252, 253, 351, 352, 353, 451, 452, 453
Studio Instruction in Strings (orchestral strings and guitar).
Studio instruction fee: Level 9.

154, 254
Class Instruction in Strings
For secondary instruments, instrumental music education majors.
Studio instruction fee: Level 7.

160, 260, 360, 460
Studio Instruction in Woodwinds
Studio instruction fee: Level 7.
Studio Instruction in Woodwinds
Studio instruction fee: Level 9.

161, 162, 163, 261, 262, 263, 361, 362, 363, 461, 462, 463
1 hr.

Class Instruction in Woodwinds
For secondary instrument, instrumental music education students.
Studio instruction fee: Level 7.

164, 264
1 hr.

Class Instruction in Woodwinds
For secondary instrument, instrumental music education students.
Studio instruction fee: Level 7.

170, 270, 370, 470
1/2 hr.

Studio Instruction in Brass
Studio instruction fee: Level 7.

1 hr.

Studio Instruction in Brass
Studio instruction fee: Level 7.

174, 274
1 hr.

Studio Instruction in Brass
For secondary instrument, instrumental music education students.
Studio instruction fee: Level 7.

180, 280, 380, 480
1/2 hr.

Studio Instruction in Percussion
Studio instruction fee: Level 7.

181, 182, 183, 281, 282, 283, 381, 382, 383, 481, 482, 483
1 hr.

Studio Instruction in Percussion
Studio instruction fee: Level 7.

184
1 hr.

Class Instruction in Percussion
For secondary instrument, instrumental music education students.
Studio instruction fee: Level 7.

Ensembles

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 an appropriate ensemble must be selected each term a student is enrolled for degree requirements. A maximum of 6 semester hours in ensemble courses (MU 190-199, 290-299, 390-399) may be applied as credit toward total degree requirements in any discipline except music education, where the maximum is 10 hours. Students may continue to enroll, however, and repeatedly participate in ensembles throughout their university career. Only students who have held membership in an ensemble for six terms should enroll in 300 level instruction. Through audition students may receive upper-level credit after three terms of membership.

190, 390 UAH Choir
Mixed voices singing the serious choral repertoire. Open to all students by audition.
Required attendance at rehearsals and performances.

193
1 hr.

Summer Chorus
Mixed voices singing a variety of choral music.

195
1 hr.

Music for A While Ensemble
Solo-ensemble performance specializing in early and contemporary music.

196, 396 Chamber Ensembles
Discussion, evaluation and performance of literature available for selected small ensembles. Piano trios, quartets, quintets, string quartets, woodwind, brass, percussion and vocal ensembles. Prerequisite: Approval of instructor.
197 Summer Band 1 hr.
Rehearsal and performance of a variety of music for concert band. By audition with the conductor.

198, 398 Huntsville Symphony Orchestra 1 hr.
An orchestra of seventy-five players with international guest artists. Performance of major symphonic, operatic, and choral literature. By audition with the conductor. Required attendance at rehearsals and performances.

199, 399 UAH Wind Ensemble 1 hr.
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.

290 Opera/Music Theatre Workshop 1 hr.
Instruction in stage movement and mannerisms, character and vocal coaching leading to performances of scene excerpts. Prerequisites: Audition with the conductor. Required attendance at rehearsals and performances.

297 UAH Jazz Ensemble 1 hr.
Open to all students with the permission of the director. This group provides the participant with opportunities to perform a wide variety of jazz styles in varied settings. Individual instruction in arranging and composition available. Required attendance at rehearsals and performances.

298 UAH Pep Band 1 hr.
Open to all students with the permission of the director. This group provides appropriate music for selected UAH athletic events. Winter term only. Required attendance at rehearsals and performances.

Music Education (MUE)

215 Music for the Young Child 3 hrs.
For elementary and special education teachers, recreational therapists, church school, or prospective teachers not trained in music. Preparation to teach children ages 3-12 through experience in singing, reading, planning, and presentation. Elementary education majors using music as their second area of study must select MUE 326 rather than MUE 215 for their GER.

225 Introduction to Music Education 1 hr.
Philosophical orientation to music teaching. Observation and mini-teaching experiences with follow-up discussions. Prerequisites: MU 301, 110 or approval of instructor.

326 Teaching General Music in Elementary Schools 3 hrs.
Materials and methods. Emphasis on developing teaching competencies. Prerequisites: MU 303, MUE 225 or permission of instructor.

327 Teaching General Music in Secondary Schools 3 hrs.
Materials and methods. Emphasis on developing teaching competencies. Prerequisites: MU 303, MUE 225 or permission of instructor.

428 Organizing and Directing Vocal Groups in Secondary Schools 2 hrs.
Repertoire, procedures for administering and teaching school glee clubs, choirs, and vocal ensembles. Prerequisites: MUE 326, 327, MU 425 or permission of instructor.

429 Organizing and Directing Instrumental Groups in Secondary School 2 hrs.
Repertoire, procedures for administering and teaching school bands, orchestras and instrumental ensembles. Prerequisites: MUE 326, 327, 425 or permission of instructor.
520 Arts in the Elementary School Curriculum 3 hrs.
Interdisciplinary approach to teaching the arts in elementary school, including music, movement, theatre, and the visual arts. Practical experiences in playing instruments (percussion), moving, drawing, creating, singing, working in clay, play-acting and pantomime. Methodology for integrating the arts through active participation.

521 Philosophical Principles of Music Education 3 hr.
Philosophical base of music education, its justification in the public school curriculum, and criteria for determining its objectives. Application of aesthetic theory to analysis and evaluation of music.

Philosophy Department

Associate Professors Martine (Chair), Rochowiak; Assistant Professors Cling, Elbert, Hanks, Lang.

The world of ordinary experience is founded upon a great number of presuppositions about the nature and extent of knowledge, the character of reality, and the foundations of value. These interconnected presuppositions, though seldom exposed to critical reflection, form the basis for our judgments and actions in every area of human concern. The essential task of philosophy is to move beyond an uncritical acceptance of these presuppositions toward a reflective appraisal of the effect they have upon one’s understanding of self and the world around one. By examining traditional philosophical positions as well as the ideas of influential contemporary thinkers, courses in philosophy offer students the opportunity to develop informed and responsible positions of their own.

Philosophy Major

Students majoring in philosophy must complete a minimum of 30 semester hours in philosophy with at least 21 hours at the 300-level or above. The following courses are required of all philosophy majors: PHL 201, 202, 301, 302, 395, and at least one course at the 400-level. Philosophy majors must also complete a minor consisting of a minimum of 18 hours in a single discipline (with other requirements as specified by the minor department) or a minimum of 21 semester hours in a cognate area of closely related courses approved by the Philosophy Department, with 12 of these hours at the 300-level or above.

Philosophy Minor

Students minoring in philosophy must complete at least 21 semester hours in philosophy including PHL 201 and 202. Recommendations concerning which courses might best complement a student’s major and related interests are available from the philosophy faculty upon request. Appropriate philosophy courses may also be used as part of a program of cognate studies with other disciplines. Such a program must include at least 12 semester hours in courses numbered 300 or above.

Philosophy (PHL)

101 Introduction to Philosophy 3 hrs.
Introduction to philosophical reflection focusing upon central problems in each of the major branches of the western tradition: metaphysics, epistemology and axiology.

201 Introduction to Logic 3 hrs.
Methodology of correct reasoning as applied to both formal and informal contexts.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>202</td>
<td>Introduction to Ethics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>301</td>
<td>Ancient Philosophy</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>302</td>
<td>Modern Philosophy</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>303</td>
<td>Contemporary Philosophy</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>310</td>
<td>Philosophy of Art</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>311</td>
<td>Philosophy of Science</td>
<td>3 hrs.</td>
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<tr>
<td>312</td>
<td>American Philosophy</td>
<td>3 hrs.</td>
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<tr>
<td>314</td>
<td>Philosophy of Eastern and Western Religions</td>
<td>3 hrs.</td>
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<tr>
<td>320</td>
<td>Symbolic Logic</td>
<td>3 hrs.</td>
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<tr>
<td>330</td>
<td>Classical Political Philosophy</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>332</td>
<td>Modern Political Philosophy</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>385</td>
<td>Selected Topics in the History of Philosophy</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>
Engineering Ethics and Professional Behavior  
Examination of ethical aspects of decisions made by engineers, including consideration both of the kinds of professional and organizational situations confronting the engineer and philosophical bases of choosing and evaluation.

Junior Research Seminar  
Intensive examination of selected topics leading to the preparation of a substantial philosophical paper. Required of all majors. May be taken twice for credit. Prerequisites: 6 hours of PHL not including PHL 201.

Directed Study in Philosophy  
Independent study in an area of philosophy selected in consultation with faculty advisor. Prerequisite: Approval of department chair.

Metaphysics  
Critical examination of traditional and contemporary responses to questions surrounding the nature of reality, the relation between determinate and indeterminate being, being and becoming, the infinite and the finite. Prerequisite: 6 hours of PHL not including PHL 201.

Epistemology  
Investigation of fundamental problems of knowledge such as the relation of knowledge and belief, truth, certainty and skepticism, perception, logic, explanation, and justification. Prerequisite: 6 hours of PHL not including PHL 201.

Advanced Moral Philosophy  
Critical examination of significant works in moral and political philosophy focusing on such issues as the relationship between morality and human nature, the individual and the state, and the consequences of actions. Prerequisites: 6 hours of PHL not including PHL 201.

Political Science Department

Professors Meek, Spitz (Chair); Associate Professors MacDougall, Pottenger, Williams; Assistant Professor Reeves, Adjunct Assistant Professors Moorman, Schumann.

The Department of Political Science offers the Bachelor of Arts in political science and the Master of Arts in public affairs.

General Education Requirements

PSC 101 (American Government) and/or PSC 135 (Introduction to Comparative Government) are the two courses to be used to fulfill General Education Requirements (GER) for non-majors. Political science majors must include AHS 300 (Statistical Analysis) in their GER.

Political Science Major

Students wishing to major in political science must include in their academic program a minimum of 36 semester hours in political science, including:

PSC 100 - Introduction to Politics (before the junior year) or
PSC 484 - Senior Seminar in Political Science (during the junior or senior year)
PSC 101 - American Government
PSC 135 - Introduction to Comparative Government
PSC 260 - Introduction to International Relations (formerly 246)
PSC 330 - Classical Political Philosophy or
PSC 332 - Modern Political Philosophy (formerly 316 and 317)
Students must also take AHS 300 - Statistical Analysis, but may not count these hours toward the required 36. Although students may satisfy the PSC 100/484 option by taking PSC 100 before their junior year, they are still **strongly encouraged** to take the Senior Seminar at some time during their junior or senior year. In addition to the 15 hours of required courses, students must take at least one course from any three of the following five sub-fields of political science:

1. International relations (PSC 362, 464, 466, 468)
2. Comparative politics (PSC 342, 344, 346, 348)
4. American law (PSC 351, 452, 454)
5. Political theory (PSC 330, 332, 334, 436, 438)

Students may satisfy the remaining 12 hours of the 36 hour degree requirement by taking additional courses in the subfield(s) of their choice or by taking courses from the following "Optional" category: (Overall, a minimum of 15 semester hours must be taken in political science courses numbered 300 or above.)

**Optional Courses**

- PSC 100 - Introduction to Politics*
- PSC 280 - Special Topics in Political Science I
- PSC 311 - Scope and Methods in Political Science
- PSC 382 - Political Sociology
- PSC 399 - Directed Study in Political Science
- PSC 480 - Advanced Topics in Political Science
- PSC 484 - Senior Seminar in Political Science*
- PSC 495 - Internship in Government
- PSC 580 - Special Topics in Political Science
- PSC 598 - Studies in Public Administration
- PSC 599 - Studies in Political Science

*PSC 100 and 484 are optional core requirements. See above.

A student with a major in political science must choose either 1) a minor from another discipline; or 2) 21 hours of cognate studies involving courses from two or more disciplines, of which 12 hours must be in upper-level courses with a minimum of 6 hours from each discipline.

Freshmen considering a major in political science should consult with the chair of the department during their freshman year. Sophomores must file a program of study before the end of their sophomore year. Transfer students are advised to consult with the chair of the department before scheduling courses.

Guidelines for curriculum planning in political science are available in the department office. These guidelines are designed to consider such intellectual and vocational interests as prelaw training, international studies, public service, and graduate school preparation.

**Political Science Minor**

The student choosing a minor in political science must take 21 hours of course work including PSC 101, 135 and either PSC 100 (before the junior year) or PSC 484 (during the junior or senior year). At least 12 of the 21 hours must be at the 300-level or above.

**Political Science for Second Area of Study**

Students majoring in elementary education may select political science as their second area of study. Major requirements can be found in the Education section. Students seeking certification in secondary education should seek advisement from the Education Department where a program of study leading to courses in political science and/or the social sciences can be developed.
Internship Programs
The Department of Political Science has an internship option for students in political science, public affairs and prelaw. Internships bridge the gap between learning experience and entry into professional life. Normally, students must have junior status or above in order to be admitted to this course.

Political Science (PSC)

100 Introduction to Politics 3 hrs.
Introduction to theories, ideas, and models related to the study of politics. (No credit for this course will be extended for work taken at other institutions. The course must be taken prior to junior-level status.)

101 American Government 3 hrs.
Introductory examination of American government and politics.

135 Introduction to Comparative Government 3 hrs.
Survey of government and politics in parliamentary, communist, transitional and third world political systems. Prerequisite: PSC 100 or 101 recommended.

260 Introduction to International Relations (formerly PSC 246) 3 hrs.
Examination of the basic factors underlying the conduct of international relations focusing upon the forces affecting the change and direction of the present state system. Special attention is given to the forces affecting war and peace. Prerequisite: PSC 101 and 135 recommended.

280 Special Topics I 3 hrs.
Selected topics in local, state, national and world politics. Prerequisite: permission of chair.

302 The American Congress 3 hrs.
(Formerly PSC 307) Examination of the organization and role of the Congress, its leadership, internal processes, and relationship with other parts of the American political system. Prerequisite: PSC 101.

304 American Presidency 3 hrs.
(Formerly PSC 308) Role of the president in the American political system. Special emphasis upon internal functioning of executive branch of government through analysis of structure and techniques of the national administration. Prerequisite: PSC 101.

306 American Federalism 3 hrs.
(Formerly PSC 323) Examination of the theory and practice of American federalism with emphasis upon the constitutional framework, intergovernmental relations and the changing roles of state and local governments. Prerequisite: PSC 101.

309 Political Parties and Interest Groups 3 hrs.
(Formerly PSC 369) Reviews the roles of two major “linkage” institutions in U.S. politics. Considers the organizational features of these institutions and their impact upon the electoral and policy-making processes. Prerequisite: PSC 101.

310 Elections and Public Opinion 3 hrs.
(Formerly PSC 365) Consideration of American elections and public opinion with focus on national elections. Changing patterns and methods of influencing public opinion are examined. Prerequisite: PSC 101.

311 Scope and Methods in Political Science 3 hrs.
Examination of the main concerns of political scientists and the methods used by political scientists. Students will gain an understanding of the history of the discipline and the research methods used by political scientists of all fields. Prerequisite: AHS 300. Lab Fee: Level 4.
330 Classical Political Philosophy 3 hrs.
(Formerly PSC 316) Careful analysis of the roots of political inquiry in selected works of ancient and medieval political philosophers such as Socrates, Plato, Aristotle, Cicero, Augustine and Aquinas. Major themes include the search for the just social order, the proper relationship between the citizen and the state, and other fundamental concepts of western political institutions. Prerequisite: 9 hours of PSC, PHL and/or HY. (Same as PHL 330).

332 Modern Political Philosophy 3 hrs.
(Formerly PSC 317) Critical examination of the philosophical foundations for modern politics that emerged from the 15th through the 19th century in western Europe. Major themes and theorists include the concepts of individual rights, property, representation, majority rule, limited government, and revolution discussed in selected writings of Machiavelli, Hobbes, Locke, Rousseau, and J.S. Mill among others. Prerequisite: 9 hours of PSC, PHL and/or HY. (Same as PHL 332).

334 American Political Thought 3 hrs.
(Formerly PSC 318) 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. Prerequisite: PSC 101.

342 Western European Governments and Politics 3 hrs.
(Formerly PSC 336) Examination of selected governments and politics of western Europe. Focus will vary but will always include Great Britain, Germany and France. Prerequisite: PSC 101, 135 recommended.

344 Eastern European Governments and Politics 3 hrs.
(Formerly PSC 337) Examination of selected governments and politics of eastern Europe. Emphasis will be on the USSR and selected countries in process of transition from communism. Prerequisite: PSC 101, 135 recommended.

346 Third World Systems 3 hrs.
(Formerly PSC 338) Growth and decay of third world nations, their socioeconomic problems and their political responses to the requirements of economic and social change. Prerequisite: PSC 135.

348 Asian Governments & Politics 3 hrs.
(Formerly PSC 339) Examination of Asian governments and politics with focus on twentieth century China and Japan. Prerequisite: PSC 101, 135 recommended.

351 Introduction to American Legal Systems 3 hrs.
(Formerly PSC 271) Structure, jurisdiction, procedures, and impact of the courts in administration of justice. Focus on the roles of the major participants in the legal system. Both criminal and civil justice topics are covered. Prerequisite: PSC 101 recommended.

362 International Law and Organization 3 hrs.
(Formerly PSC 343) Contribution of international law and organization to world order since World War II. Role of the United Nations in the third world and to political and sociological origins of international law and its application to selected contemporary problems. PSC 135 or PSC 260 recommended.

382 Political Sociology 3 hrs.
Examination of concepts, theories, and research findings related to the structure of political institutions in society and their relation to other societal institutions. Stratification, correlates, bases, legitimation, and change of power in society. Prerequisite: PSC 101 or 351 (formerly 271) recommended. (Same as SOC 382).
Public Administration 3 hrs.
(Formerly PSC 350) Administrative principles and practices in public organizations and agencies. Prerequisite: PSC 101.

State Government and Politics 3 hrs.
(Formerly PSC 221) Introduction to state and local politics in America. Different governmental forms and their impact on public policies. Prerequisite: PSC 101.

Alabama & Southern Politics 3 hrs.
(Formerly PSC 223) Surveys the government and politics of Alabama and provides an overview of the political culture in the American South. Prerequisite: PSC 101.

Urban Politics 3 hrs.
(Formerly PSC 423) Examination of urban politics in America with attention given to urban problems, urban environment, governmental forms, power structures, and policy outputs. Prerequisite: PSC 101. PSC 221 or PSC 323 recommended.

Contemporary Political Ideologies 3 hrs.
(Formerly PSC 419) Critical examination of the nature and ideologies in contemporary politics. Among the major political belief systems studied will be important examples of conservatism, liberalism, socialism, communism, and fascism in theory and practice. Prerequisite: PSC 101.

Contemporary Political Thought 3 hrs.
Systematic study of recent and current thinking on issues and problems of politics, social theory and ethics. Prerequisites: 9 hours PSC, PHL, and/or HY.

American Constitutional Law 3 hrs.
(Formerly PSC 371) Policy-making role of the Supreme Court in the American political system through analysis of leading cases in interpreting the constitution. Prerequisite: PSC 101, 351 recommended.

Civil Liberties 3 hrs.
(Formerly PSC 471) Judicial interpretations of contemporary questions involving rights of individuals and limits of freedom of action in American society. Prerequisite: PSC 101, 351 and/or 452 recommended.

American Foreign Policy 3 hrs.
(Formerly PSC 465) Institutions, processes and personalities affecting the formation of American foreign policy. Prerequisite: PSC 101, 135 recommended.

Foreign Policy of Eastern European Governments 3 hrs.
(Formerly PSC 467) Examination of the transitional foreign policies of the eastern European countries with a focus on the USSR. Prerequisite: PSC 260 and/or 344.

National Security Policy 3 hrs.
Examination of the institutions and policies of the national security network of the United States. Prerequisite: PSC 101.

Advanced Topics in Political Science 3 hrs.
Selected topics in local, state, national and world politics. May be repeated for up to 6 hours credit. Prerequisite: permission of the department chair.

Senior Seminar in Political Science 3 hrs.
Advanced examination into the subfields of political science offered by the department. May be repeated with different faculty for up to 6 hours credit. Required for students who have not taken PSC before junior year. Prerequisites: PSC 101, advanced status in political science and permission of the department chair.

Internship in Government 1-6 hrs.
Undergraduates may receive from 1 to 6 hours of academic credit for an internship with local, state, or federal governmental agencies. Students must attend internship seminars, keep a log of activities, and submit a report on their internship.
580 Special Topics in Political Science 1-3 hrs.
Selected topics in local, state, national and world politics.
598 Studies in Public Administration 1-3 hrs.
Special studies and projects in public administration.
599 Studies in Political Science 1-3 hrs.
Special studies and projects in political science. Prerequisite: Approval of department chair.

Psychology Department

Professors Kirkpatrick (Chair), Rogers; Associate Professors Hays, James, Sullins; Assistant Professors Carpenter, Dittmar.

The Department of Psychology offers the B.A. and M.A. degrees in psychology.

Psychology Major

The program of study for a psychology major includes 36 hours of psychology with at least 24 hours of these courses number 300 or above. In addition, the psychology major must be accompanied by a minor which meets the requirements designated by the selected discipline. Course work required for the major is specified below in Curriculum for Majors. Students planning to major in psychology are advised to 1) read and follow prerequisite requirements (see Prerequisites), 2) complete PY 101, PY 102, AHS 300, and PY 302 no later than the sophomore year, and 3) seek advice from the departmental chair in planning a program of study before enrolling in advanced courses.

Psychology Minor

A minor in psychology consists of 21 hours of psychology courses of which 15 hours must be numbered 300 or above. Course work required for the minor is specified below in Curriculum for Minors.

Psychology for Students Seeking Teacher Certification

Students desiring certification should obtain preliminary counseling in the Department of Education. A student majoring in elementary education may choose psychology as the second area of study. A student seeking certification at the secondary level may elect to major in psychology or to use psychology as a second area of study. Certification requirements can be found in the Department of Education section. Curricula which include teacher certification may require more than the minimum total of 128 hours for the degree.

Prerequisites

All psychology courses numbered 200 and above require satisfactory completion of PY 101 and 102. Prior to enrollment in PY 302 and PY 311, a student must complete AHS 300 - Statistical Analysis. PY 302 should be taken prior to enrollment in any Group A courses. Preferably, courses numbered 400 or 500 should not be taken prior to the senior year; in no case should a student enroll in these courses until the last term of the junior year.
Curriculum for Majors

Required:

PY 101, 102 Two course sequence w/lab 6 hrs.
PY 302* Experimental 3 hrs.
PY 311* Ind Diffs/Tests & Meas 3 hrs.
PY 426 History and Systems 3 hrs.
PY 500/501 Research 6 hrs.
Group A (See below) 6 hrs.
Group B (See below) 6 hrs.
Elective (See below) 3 hrs.

*AHS 300 is a prerequisite for PY 302 and PY 311.

Group A: PY 380 Cognition
PY 314 Learning
PY 316 Perception
PY 436 Physiological

Group B: PY 301 Personality
PY 310 Child Psychology
PY 315 Developmental
PY 330 Communication
PY 375 Social
PY 433 Abnormal

Electives: PY 207 Personal Adjustment
PY 420 Seminar
PY 422 Individual Research
PY 490 Readings
PY 491/2 Special Topics
PY 502 Industrial
PY 530 Psychometrics
PY 535 Theories of Abnormal

Curriculum for Minors

PY 101-102 Two course sequence w/lab 6 hrs.
Group A (See above) 3 hrs.
Group B (See above) 3 hrs.
Additional 300 and above 9 hrs.

21 hrs.

Curricula for Students Seeking Teacher Certification

Cognate for Elementary Education Majors

PY 101-102 General sequence 6 hrs.
PY 380/314 Cognition or Learning 3 hrs.
PY 311* Ind Diffs/Tests & Meas 3 hrs.
PY 315 Developmental Theories 3 hrs.
PY 375 Social 3 hrs.
PY 301/433 Personality or Abnormal 3 hrs.

21 hrs.

*AHS 300 is a prerequisite for PY 311.
Psychology as a Major with Secondary Certification

PY 101-102 General sequence 6 hrs.
AHS 300 Statistical Analysis 4 hrs.
PY 302 Experimental 3 hrs.
PY 311 Ind Diffs/Tests & Meas 3 hrs.
PY 301/315 Personality or Dev. Theories 3 hrs.
PY 375 Social 3 hrs.
PY 380 Cognition 3 hrs.
PY 500-501 Research 6 hrs.
Choose 3 hrs. from the following:
PY 301 Personality (if not above) 3 hrs.
PY 315 Developmental (if not above) 3 hrs.
PY 330 Communication 3 hrs.
PY 433 Abnormal 3 hrs.
Choose 3 hrs. from the following:
PY 314 Learning 3 hrs.
PY 316 Perception 3 hrs.
PY 436 Physiology 3 hrs.

37 hrs.

Psychology as a Teaching Field for Secondary Education

PY 101-102 General sequence 6 hrs.
AHS 300 Statistical Analysis 3 hrs.
PY 302 Experimental 3 hrs.
PY 311 Ind Diffs/Tests & Meas 3 hrs.
PY 301/315 Personality or Dev. Theories 3 hrs.
PY 375 Social 3 hrs.
PY 380 Cognition 3 hrs.
Choose 3 hrs. from the following:
PY 301 Personality (if not above) 3 hrs.
PY 315 Developmental (if not above) 3 hrs.
PY 330 Communication 3 hrs.
PY 433 Abnormal 3 hrs.

28 hrs.

Psychology (PY)

101 General Psychology I 3 hrs.
First of a two-term sequence. Introduction to methods and research findings in the field. Topics will include: historical perspectives, learning, memory, cognition, language, the biological and social basis of behavior, sensation, perception, motivation, emotion, human development, personality theories and assessment, and abnormal behavior and therapies. The student must engage in approved experiential activities such as subject participation in a current research study or laboratory, lecture, and video experiences designed to illustrate the development, testing, and validation of psychological knowledge.

102 General Psychology II 3 hrs.
Second of a two-term sequence. Prerequisite: PY 101.
207 Psychology of Personal Adjustment 3 hrs.
Application of basic principles in psychology to origin and resolution of personal conflicts. The student must engage in approved experiential activities such as subject participation in a current research study or laboratory, lecture, and video experiences designed to illustrate the development, testing and validation of psychological knowledge. Prerequisite: PY 101, 102.

301 Personality 3 hrs.
Examination of various theories of personality with possible implications for research. Prerequisite: PY 101 and 102.

310 Child Psychology 3 hrs.
A study of the process of development in the human organism. Research, practical, and theoretical orientation used to explore developmental issues and processes will be examined. Prerequisite: PY 101, PY 102.

302 Experimental Psychology 3 hrs.
Design and execution of experiments in psychology. Data analysis and manuscript preparation. Prerequisites: PY 101, 102 and AHS 300. Lab Fee: Level 3.

311 Individual Differences 3 hrs.
Individually unique patterns of behavior. Both social and biological influences are examined. Aspects of psychological testing and evaluation are included. Prerequisites: PY 101, 102.

314 Learning 3 hrs.
Analysis of learning principles from simple relationships with animals to the complexities of human language and problem solving. Prerequisites: PY 101, 102, 3 hrs. PY 300-level or above. PY 302 strongly recommended. (Offered once each year).

315 Developmental Psychology 3 hrs.
Cognitive, psychoanalytic, ethological, behavioral, and humanistic theories of development. Prerequisites: PY 101, 102. PY 310 recommended.

316 Perception 3 hrs.
Exploration of structures and processes involved in perception, with special attention to the theoretical and methodological issues involved in perception research. Emphasizes visual perception and attention, with additional work in audition and the chemical senses. Prerequisites: PY 101, 102, 3 hrs. PY 300-level or above. PY 302 strongly recommended.

330 Psychology of Communication 3 hrs.
Theories, problems, and research in areas of interpersonal, nonverbal, and mass communication, formulating a psychological conception of man as an information-gathering and information-processing system. Empirical study of nonverbal communication. Prerequisites: PY 101, 102 or 3 hrs. CM. (Same as CM 330)

375 Social Psychology 3 hrs.
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. Prerequisite: SOC 100 or PY 101, 102. (Same as SOC 375)

380 Cognition 3 hrs.
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. Prerequisites: PY 101, 102, 3 hrs. PY 300-level or above. PY 302 recommended.
Courses listed below are open to students who are seniors or those enrolled in the last term of their junior year.

**420 Seminar in Psychology** 3 hrs.
Presentation and discussion of reports on psychological problems within a particular area. Prerequisites: 15 hours PY and approval of instructor. May be taken twice for credit.

**422 Individual Research** 3 hrs.
With advice of instructor, design and execution of original experiment in psychology. Prerequisites: 15 hours PY and approval of instructor. May be taken twice for credit.

**426 History and Systems in Psychology** 3 hrs.
Survey of psychological theory and experimentation regarding human behavior and mental processes from ancient times to the present. Prerequisites: 9 hrs. PY 300-level or above.

**433 Abnormal and Health Psychology for the Human Service Professions** 3 hrs.
Survey of major psychological approaches to conceptualizing abnormal behavior, with discussion of present diagnostic categories of psychological disorders. Prerequisites: PY 301 and 311.

**436 Physiological Psychology** 3 hrs.
Neural and endocrinological systems underlying behavior. Prerequisites (either a or b): (a) 15 hrs. of PY or approval of instructor; (b) BYS 114 or BYS 313 and 6 hours of PY or approval of instructor. PY 302 strongly recommended. (Same as BYS 436).

**490 Readings in Psychology** 3 hrs.
Supervised in-depth readings in area of particular interest to student. Prerequisites: 12 hrs. PY 300-level or above and approval of instructor. May be taken twice for credit.

**491 Special Topic in Psychology** 1 hr.
Pre-announced special areas in seminar discussion, laboratory work, or practicum. Prerequisites: 12 hours PY 300-level or above. May be taken twice for credit.

**492 Special Topic in Psychology** 2 hrs.
Pre-announced special areas in seminar discussion, laboratory work, or practicum. Prerequisites: 9 hours PY 300-level or above. May be taken twice for credit.

**500 Human Research I** 3 hrs.
Human behavior observation and/or experimentation. Students will design a study dependent upon previous coursework, will engage in data collection and analysis, and will report their findings in a research paper and an oral presentation. Prerequisites: PY 302, 15 hrs. PY 300-level or above and senior/graduate standing. Lab Fee: Level 3. (Offered Fall Term)

**501 Human Research II** 3 hrs.
Required continuation of PY 500. Prerequisite: PY 500 and senior/graduate standing. Lab Fee: Level 3. (Offered Winter Term)

**502 Industrial and Organizational Psychology** 3 hrs.
Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems. Prerequisite: Senior/graduate standing.

**530 Psychometrics** 3 hrs.
History and development of psychological testing with special emphasis given to both theory and process of effective evaluation. Prerequisites: AHS 300 and PY 311.

**535 Theory of Abnormal Psychology** 3 hrs.
Major behavior exceptionalities of childhood and adulthood with emphasis on empirical findings. Prerequisite: PY 433 or approval of instructor and Senior/graduate standing.
Sociology Department

Associate Professors: Finley (Chair), Colclough, Haralick, Hodges, Lee.

The Department of Sociology offers the B.A. with a major in sociology, a minor in sociology and sociology as a second area of study.

Sociology Major

In addition to the General Education Requirements (GER) for the B.A., students who major in sociology must complete 37 hours of sociology courses including:

I
SOC 100 Introduction to Sociology
AHS 300 Social Statistics
SOC 300 Research Methods
SOC 465 Sociological Theory

II. It is recommended that students take at least 6 hours from each of the following clusters:

Cluster 1
SOC 350 Social Stratification
SOC 455 Sociology of Work and Occupations
SOC 470 Social Organization
SOC 450 Medical Sociology
SOC 380 Sociology of Science and Technology
SOC 382 Political Sociology
SOC 333 Sociology of the South
SOC 335 Future Social Trends
SOC 200 Introduction to Anthropology

Cluster 2
SOC 106 Marriage and Family
SOC 306 Gender Roles
SOC 310 Sociology of Childhood
SOC 311 Life Span Development
SOC 319 Deviance and Social Control
SOC 325 Sociology of Education
SOC 345 Social Gerontology
SOC 375 Social Psychology
SOC 452 Sociology of Mental Health

III. A minimum of 21 hours should be taken in courses numbered 300 or above.

Sociology Minor

A student developing a minor in sociology with a major in another discipline must complete 21 hours of sociology courses including SOC 100 and SOC 102. A minimum of 12 hours should be in courses numbered 300 or above. Sociology courses may also be used in conjunction with courses from other disciplines to form a cognate area of study. Such a program should be developed with the advice of the sociology faculty and approved by the chair of the student’s major department.

Sociology for a Second Area of Study

Students majoring in elementary education may select sociology as their second area of study. See major requirement in the Education section. To meet university requirements, stu-
Students must complete a minimum of 18 hours in sociology, 12 of which must be above the 300-level in sociology. Courses should be chosen with the help of the education advisor and approval of the chair of the Department of Sociology. The recommended program is:

- SOC 100 Introduction to Sociology
- SOC 102 Social Problems
  or
- SOC 106 Marriage and Family
- SOC 325 Sociology of Education

3 additional courses in sociology at the level of 300 or above

(The following courses are especially useful for teachers:
- SOC 306, SOC 310, SOC 311, SOC 330, SOC 333, SOC 350, SOC 375, SOC 452, SOC 470.)

Sociology (SOC)

100 Introduction to Sociology 3 hrs.
Perspective methods, concepts, and general findings of the sociologist. Historical and conceptual development of sociology.

Lower-division sociology courses listed below are open to students who have completed SOC 100.

102 Analysis of Social Problems 3 hrs.
Sociological interpretation of contemporary social problems as they relate to significant trends in complex societies.

106 Marriage and Family 3 hrs.
The family as a social institution, its structure and function in contemporary societies, dating, marital interaction, life cycle, and socialization process.

200 Introduction to Anthropology 3 hrs.
Origin and development of human ways of life. Analysis of preliterate societies.

230 Mass Media in America: Theory and Criticism 3 hrs.
Mass communication theory, history of American mass media, and criticism of contemporary forms and functions of mass media of communication in the United States. (Same as CM 230).

300 level sociology courses are open to students who have taken SOC 100.

300 Research Methods 3 hrs.
Broad and balanced background in various types of social research methods. Fundamental logic and specific techniques in conducting research. Prerequisite: AHS 300. Lab Fee: Level 4.

306 Sex Roles 3 hrs.
Social and sexual roles, their interrelationships, and articulation with societal institutions and agencies. Social upheaval that is both cause and effect of sex-role changes in societies in transition.

310 Sociology of Childhood 3 hrs.
Environmental influences on socialization of infants and children. Various family roles, school, peer group, and culture as they affect the growing child.

311 Life Span Development 3 hrs.
Major social influences on human development, change, continuity, and discontinuity from birth to old age. Turning points and role throughout life span. Prerequisite: SOC 310.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>315</td>
<td>Population and Ecology</td>
<td>3 hrs.</td>
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<tr>
<td>319</td>
<td>Deviance and Social Control</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>325</td>
<td>The Sociology of Education</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>330</td>
<td>Minority Groups</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>333</td>
<td>Sociology of the South</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>335</td>
<td>Future Social Trends</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>340</td>
<td>Special Topics</td>
<td>1-3 hrs.</td>
</tr>
<tr>
<td>345</td>
<td>Social Gerontology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>350</td>
<td>Social Stratification</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>375</td>
<td>Social Psychology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>380</td>
<td>The Sociology of Science and Technology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>382</td>
<td>Political Sociology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>390</td>
<td>Readings and Individual Research</td>
<td>3 hrs.</td>
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</tbody>
</table>

Growth and distribution of world population and environmental problems created in relation to population growth.

Social construction of deviant behavior and societal reactions to it.

Education as a social institution; its structure, function, and role in contemporary life. (Same as ED 325).

Nature of minorities: status differentiation and group structure, institutional trends, and intergroup relations.

Examines the contemporary south focusing on unique social processes and cultural heritage leading to its development.

Major social trends that leading forecasters project for the next 25 years. Nature, methods, and outlook of modern social and technical forecasters. (A course for students with a variety of majors. Sociology 100 helpful but not required.)

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.

Theoretical and empirical approach to human aging process with its various social and cultural aspects. Major problems and issues in aging and current programs designed to meet needs of the elderly.

Social class, social status, and social mobility. Social power and prestige. Differential opportunities and resultant behaviors of upper, middle, and lower social classes.

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. Prerequisite: SOC 100 or PY 101, 102. (Same as PY 375).

Survey of the social forces that shape the nature and direction of science and technology. Involves a critical look at modern science and technology. Prerequisite: SOC 100 helpful but not required.

Examination of concepts, theories, and research findings related to the structure of political institution in society and its relation to other social institutions. Stratification, correlates, bases, legitimation, and change of power in society. Prerequisite: SOC 100 or PSC 101. (Same as PSC 382)

Supervised readings or in-depth research or both in area of specialized interest to student or instructor. Permission of instructor. May be taken twice for credit with advisor's approval.
The department recommends that 400-level courses be reserved for junior or senior standing or by permission of instructor.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>440</td>
<td>Sociology of Religion</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Sociological principles applied to religious institutions; interaction of religion and society. Sects and cults, the religious commune. Religion and social change, and contemporary religious issues.</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>Medical Sociology</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Relationship of sociology and social psychology to medicine. Role and status of medical and paramedical personnel in the United States; health-care delivery systems and problems encountered.</td>
<td></td>
</tr>
<tr>
<td>452</td>
<td>Sociology of Mental Health</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Social construction of mental health and mental illness. Mental hospitals, community mental health center, and mental health movement.</td>
<td></td>
</tr>
<tr>
<td>455</td>
<td>Sociology of Work and Occupations</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Contemporary work situations and experiences. Alienation in work, impact of technological change and bureaucratization, primary work groups and work culture, professionalization, unionization, workers' self-management experiments, and work-leisure relationship.</td>
<td></td>
</tr>
<tr>
<td>465</td>
<td>Sociological Theory</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Development of discipline of sociology in terms of major trends of sociological theory, past and present, and major theoretical problem areas. Nature of sociological theory in relation to other disciplines. Prerequisites: SOC 100, 102, and junior or senior standing.</td>
<td></td>
</tr>
<tr>
<td>470</td>
<td>Social Organization</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Introduction and critical exploration of the analysis of social units including groups, organizations, communities, societies, and the world system of societies. Various forms of analysis will be considered, from Marxist to network approaches. Prerequisite: SOC 100.</td>
<td></td>
</tr>
<tr>
<td>657</td>
<td>Complex Organization in Industrial Society</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>Mainstream and critical sociological theories for understanding complex organization in industrial societies. Specific areas to be covered include: historical development, structure and processes, contradiction and conflict, and alternative forms. Prerequisite: Senior or graduate standing/permission of instructor.</td>
<td></td>
</tr>
</tbody>
</table>
The College of Nursing offers the Bachelor of Science in Nursing and the Master of Science in Nursing. The professional components of the undergraduate and graduate programs are designed to give the student the theoretical and experiential base for current and future practice. The undergraduate curriculum also provides general education options which foster personal development. The graduate program offers opportunity for specialization for advanced nursing practice.

The undergraduate program in Nursing is approved by the Alabama Board of Nursing. Both the baccalaureate and the masters programs in Nursing are accredited by the National League for Nursing.

Undergraduate Program

The undergraduate curriculum is divided into two components, the lower and upper divisions. Lower division courses provide a broad general education base and establish a foundation for upper division courses. Upper division courses provide the theoretical and practical bases for nursing practice in an increasingly complex health care system.

Students enrolled in lower division courses are advised through the College of Nursing Office of Student Affairs. After admission to the upper division students are assigned to a faculty advisor with whom they must meet prior to registration each term.

Students transferring to UAH from other institutions should seek advisement from the College of Nursing Office of Student Affairs before registration. The student transferring into the nursing program has the same options of testing for credit or advanced standing as other university students (see Admissions Information). Credit for at least one-half of the major nursing courses must be earned at UAH to complete requirements for the B.S.N. degree.

Registered Nurses

Registered nurses may be admitted to the undergraduate program to meet requirements for the Bachelor of Science in Nursing degree. A specific schedule of required courses must be completed with the advisement through the College of Nursing Office of Student Affairs. Registered Nurses are allowed the opportunity, on the basis of their previous education and licensure, to validate 29 semester hours in designated courses in the nursing curriculum by successfully passing two NLN Nursing Mobility Profile Examinations or through program review where such agreements exist. This planned program also offers opportunities for part-time study and nontraditional hours at UAH and off campus sites.
To be admitted to upper division clinical courses of the nursing major, a Registered Nurse must present evidence of (1) current RN license in good standing in Alabama (2) current professional liability coverage (3) current CPR certification, (4) a letter of reference documenting satisfactory work experience as a Registered Nurse for the time period immediately prior to admission to the clinical portion of the major, and (5) meet requirement listed under Policies for Registered Nurses, Health Service and Responsibility to Agencies.

BSN/MSN Articulation Program for Registered Nurses

An option is provided for Registered Nurse students who wish to earn both the BSN and MSN. Graduate level courses are taken while pursuing the BSN degree and are not repeated when admitted to the MSN program.

Policies for Registered Nurses

1. All academic policies established by UAH and the College of Nursing will apply to registered nurses. RN students must meet admission requirements and follow application procedures for UAH and the College of Nursing.
2. Academic advisement will be provided on an individual basis to assure that students follow the required sequence of courses in the nursing major.
3. Candidates for admission to the RN completion program must show proof of a current licensure in the state of Alabama. Applicant will not be eligible for admission or continuance in the RN completion program if license is suspended or revoked. In addition, a letter of reference from last employer will be required, assuming employment within last five years. Credit by examination is optional. Through testing, or program review students may validate all or part of the junior year courses. Students are encouraged to seek advisement regarding the validation process.
4. Recent graduates of associate degree or diploma nursing programs who are not yet licensed may be admitted to UAH to complete lower division coursework, but will not be eligible for admission to the clinical component RN completion program until they are licensed in Alabama.
5. Students in the RN completion program must submit a plan for completion of the nursing major during the first term of course work. Time limits for completion of the program will be as stated in the UAH catalog.
6. Registered nurses will receive credit for junior year nursing courses, except NUR 330, on the basis of having obtained passing scores on the NLN Nursing Mobility Profile examinations. In addition NUR 384, Nursing Process in Professional Practice, must be successfully completed before progression to the senior level clinical courses. Arrangements for taking the NLN Nursing Mobility Profile exams are the responsibility of the registered nurse student and must be made through the College of Nursing Office of Student Affairs.
7. Candidates may repeat each validation examination only one time. Failure to obtain a passing score after two attempts will result in the candidate having to successfully complete the appropriate course(s) in the junior year before progressing to the senior year.
8. Credits will be awarded for validation by examination only to students who have been admitted to UAH.

Health Requirements

The clinical experiences of nursing students require a health screening program. The following steps are required as part of admission to the upper division nursing major:

1. Health examination by a physician or a certified nurse practitioner. Reports certifying satisfactory physical and mental health must be submitted on forms provided by the College of Nursing and must be on file in the College of Nursing Office of Student Affairs by August 15 prior to admission to the junior year.
2. Immunization for Hepatitis B. Certification that the series of injections has begun must
be on file in the College of Nursing Office of Student Affairs by August 15 prior to admission to the junior year. Immunizations are at the expense of the student.

In addition, students are advised to obtain health insurance. Hospitals and health agencies provide emergency treatment to students for injury or illness occurring in the course of program requirements. Such treatment shall, however, be at the expense of the student.

**Undergraduate Admission Requirements**

1. Applicants for admission to the lower division nursing major must complete all requirements for admission to UAH as described elsewhere in this catalog.

2. Admission to the upper division nursing major (junior year) is competitive. Each year's junior class is selected from applicants who meet the minimum requirements. Applicants must meet all requirements for admission to UAH and complete an additional application for the upper division nursing major. These applications are available from the College of Nursing Office of Student Affairs. Students are admitted once per year for Fall Term, and priority is given to candidates who have submitted all application materials by April 1.

3. All lower division course requirements for nursing major outlined in this section of the catalog should be completed before a student is admitted to the upper division of the nursing major.

4. A minimum grade of C is required in all natural and behavioral science courses, mathematics, statistics, and English composition courses.

5. A student admitted to the upper division major must have an overall 2.0 (C) average on all hours pursued, including all course work taken at other colleges and universities as well as at UAH. The GPA in required prerequisite courses is particularly relevant.

6. Students must meet health requirements, submit evidence of CPR certification, and obtain required liability insurance. Additional information about these requirements is provided at the time of admission to the upper division.

**Undergraduate Progression, Graduation Requirements**

1. A grade of C or above must be earned in required nursing courses. A student who receives a grade below C in a required nursing course may repeat the course one time only. (Required nursing courses include NUR 234, 321, 322, 330, 361, 372, 373, 423, 473, 480, 481.)

2. A student who receives two grades below C in required nursing courses at any time during the program, either in the same course or in separate courses, will not be permitted to continue in the program.

3. An overall 2.0 (C) average in all course work pursued, as well as in all courses taken in the nursing major, is required for graduation.

4. Activity courses credits accepted toward the degree will be limited as follows: Physical education—3 credits; military science—3 credits; music—2 credits; art activity—2 credits. A limit of four credits in any combination of these activity courses will be accepted toward meeting graduation requirements.

5. Students must meet standards for health as stated elsewhere in the catalog.

6. Requests for exceptions to any of the above requirements are to be directed to the Dean of the College of Nursing.

7. In addition to the above requirements, registered nurse students must comply with Policies for Registered Nurses.

**Responsibility to Agencies**

Students are responsible for complying with policies and procedures required by clinical agencies, including coverage by malpractice insurance when enrolled in clinical courses. Failure to meet this requirement may mean that the student is excluded from required practice and prevented from completion of the program.
Baccalaureate Program of Studies

Lower Division: 63 semester hours

<table>
<thead>
<tr>
<th>Natural science, mathematics, and statistics:</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological sciences (BYS 112, 214, 313, 314)</td>
<td>16</td>
</tr>
<tr>
<td>Chemistry (CH 101, 105)</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics (Level I)</td>
<td>3</td>
</tr>
<tr>
<td>Statistics (a statistics course offered in any department)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social and behavioral sciences:</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociology (SOC 100, 106)</td>
<td>6</td>
</tr>
<tr>
<td>Psychology (PY 103)</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Humanities:</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English composition (EH 101 and 102)</td>
<td>6</td>
</tr>
<tr>
<td>Literature or history (two courses in sequence)</td>
<td>6</td>
</tr>
<tr>
<td>Human Development</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

| Elective                                    | 3              |

<table>
<thead>
<tr>
<th>Nursing:</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower division core (NUR 234)</td>
<td>4</td>
</tr>
</tbody>
</table>

Upper Division: 65 semester hours

| Clinical nursing core courses (NUR 361, 372, 373, 480, 481, 473) | 47             |
| Introduction to Pharmacology (NUR 321)                           | 2              |
| Nutrition in Nursing (NUR 322)                                   | 2              |
| Introduction to Health Assessment (NUR 330)                      | 3              |
| Research Process in Nursing (NUR 423)                           | 2              |
| Electives                                                        | 9              |
| **Total**                                                        | **65**         |

NOTE: Registered nurse students may earn 29 hours of credit by validation or program review for selected upper division nursing courses. RN students must also complete NUR 384: Nursing Process in Professional Nursing (2 hrs.)

Summary

A total of 128 semester hours of credit is required for the B.S.N. degree. As specified in the program of studies, 60 semester hours of nursing constitute the major.

Nursing (NUR)

234  Foundations of Nursing  4 hrs.

Theoretical foundations and clinical skills of nursing practice including nursing process, levels of prevention, adaptation, communication, role, and health-care systems. Laboratory and selected clinical experiences included. Lab Fee: Level 7, Sp, S.
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition in Nursing</td>
<td>2 hrs.</td>
<td>Knowledge and principles of nutrition applied to individual health needs. Lab Fee: Level 1.</td>
</tr>
<tr>
<td>Introduction to Health Assessment</td>
<td>3 hrs.</td>
<td>Basic concepts and techniques of interviewing, history-taking, and physical assessment emphasizing normal findings. Lab Fee: Level 7.</td>
</tr>
<tr>
<td>Nursing Care of Persons Experiencing Surgical Interventions</td>
<td>3 hrs.</td>
<td>Role of the nurse in providing nursing care for clients experiencing surgical intervention. The nursing process provides the framework for promoting quality perioperative nursing care for the client and his family. Lab Fee: Level 3. Junior standing.</td>
</tr>
<tr>
<td>Death and Dying</td>
<td>3 hrs.</td>
<td>Influence of death and dying upon attitudes and thinking gleaned from historical, cultural, philosophical, and scientific perspectives. Intimate reactions and beliefs concerning death and identifying coping resources. Elective. Lab Fee: Level 2.</td>
</tr>
<tr>
<td>Nursing as a Political Force</td>
<td>3 hrs.</td>
<td>Overview of the legislative process and legislation relative to health care issues. The role of the professional nurse in the political climate is explored. Elective.</td>
</tr>
<tr>
<td>Drug and Other Substance Abuse</td>
<td>3 hrs.</td>
<td>Issues arising from the intentional or inadvertent abuse or misuse of drugs and food; the legal and physical implications of such behavior. Emphasis is placed on theories of causation and treatment of methodologies. Elective. Open to non-majors. Lab Fee: Level 1.</td>
</tr>
<tr>
<td>Introduction to Computers in Nursing</td>
<td>3 hrs.</td>
<td>Provides experience in the use of basic and versatile software programs which have wide applicability within nursing practice and within the students educational process. Lab Fee: Level 3. Elective.</td>
</tr>
<tr>
<td>Nursing Process across the Life Span</td>
<td>8 hrs.</td>
<td>Nursing theory and process related to caring for individuals of all ages experiencing alteration in health. Emphasis is placed on the impact of long term illness. Clinical experiences in acute, long term care, and rehabilitation are included. Lab Fee: Level 8. Prerequisite: NUR 361.</td>
</tr>
<tr>
<td>Nursing Process in Care of the Developing Family</td>
<td>8 hrs.</td>
<td>Nursing process used to promote health and facilitate adaptation in child bearing and child-rearing families. Clinical experiences in maternity, community, and pediatric settings. Lab Fee: Level 8. Prerequisite: NUR 361.</td>
</tr>
<tr>
<td>Nursing Process in Professional Nursing</td>
<td>2 hrs.</td>
<td>Addresses the philosophical, social and ethical principles inherent in the practice of professional nursing. Emphasis is on the use of the nursing process and theoretical bases for professional nursing practice. Prerequisite: Registered Nurse. Lab Fee: Level 2.</td>
</tr>
</tbody>
</table>
Independent Study 1-4 hrs.
Individualized independent study of specific nursing problem under sponsorship of a nursing faculty member with special preparation in the field. Elective.

Health Care and the Law 3 hrs.
Health care law designed to integrate pertinent aspects of law into the study and/or practice of health care. Lab Fee: Level 1.

Applied Pathophysiology 3 hrs.
Exploration of human adaptation and alteration in system function as a basis for nursing decision making. Clinical simulations assist the student in selecting appropriate interventions. Elective. Prerequisite: Senior standing or permission of instructor. Lab Fee: Level 1.

Research Process in Nursing 2 hrs.
Research process applied to problems in nursing as a basis for evaluation of existing practice and research. Lab Fee: Level 2. F, Sp.

Nursing Leadership in Professional Practice 8 hrs.
Principles of leadership and management related to delivery of nursing care. Students work in selected health care facilities with preceptors. Prerequisites: NUR 480 or 481. Lab Fee: Level 8. Prerequisite: Completion of junior-level courses.

Nursing Process in Community Health 8 hrs.
Nursing process used to promote health and foster adaptation in individuals, families, and communities. Clinical experiences in selected community health agencies and selected settings. Lab Fee: Level 8.

Nursing Process in Acute Care Nursing 8 hrs.
Nursing process for patients experiencing complex health alterations requiring intensive care. Clinical experiences in medical, surgical, and psychiatric settings. Lab Fee: Level 8. Prerequisite: Completion of junior-level courses.
Realizing that the acquisition of scientific knowledge and expertise is not only a profession but also a vital support to other disciplines, the College of Science offers programs designed to meet various educational, vocational and professional goals. Students may select programs of study for career opportunities in mathematical, life, and physical sciences or as background requirements for professional studies in medicine, engineering and education. In addition, the faculty assists students in preparation for advanced studies and in planning research projects to enhance course work. By encouraging intellectual as well as technical development, the faculty seeks to introduce students to scientific inquiry as an orderly thought process.

The College of Science consists of five academic departments: Biological Sciences, Chemistry, Computer Science, Mathematical Sciences, and Physics. Programs are administered by these five departments and the Office of the Dean. The Optical Science degree is administered through the Physics Department. Specific departmental degree requirements along with course descriptions are listed in the sections that follow.

Undergraduate Degrees and Study

The College of Science awards the Bachelor of Science and the Bachelor of Arts Degree. Majors are offered in biological sciences, chemistry, computer science, mathematics, mathematics education, optical science, and physics. A certificate program in environmental science is offered to undergraduates majoring in sciences or mathematics and to graduates with these majors. In addition, courses are offered in atmospheric science and statistics.

Specific degree programs include:

- Biological Sciences  
  B.S., B.A.
- Chemistry  
  B.S.
- Computer Science  
  B.S.
- Mathematics  
  B.S., B.A.
- Mathematics Education  
  B.S., B.A.
- Optical Science  
  B.S.
- Physics  
  B.S.

Junior College Work (After 64 Semester Hours)

After a student majoring in the College has earned more than 64 semester hours of credit (UAH plus transfer), course work taken at a junior college will normally not be accepted for transfer. Exceptions to this policy must be approved prior to taking additional course work. Requests for exceptions must be in writing and approved by the chair of the UAH department where the course is taught, and by the Dean of the College of Science.
Health and Physical Education Courses

Students who major in the College may count up to three semester hours of health and physical education courses toward their requirements for graduation.

Graduate Degrees and Study

The College of Science offers graduate programs which lead to the Master of Science degree in biological sciences, chemistry, computer science, mathematics, and physics and to the Master of Arts degree in mathematics. Doctoral programs are offered in applied mathematics, atmospheric science, computer science, materials science, and physics. The Doctor of Philosophy degree in chemistry is available through a cooperative program with the University of Alabama, Tuscaloosa. A certificate in environmental science is available in conjunction with graduate degrees in science and mathematics, and a significant number of graduate courses are offered in biochemistry and optical science. For graduate course offerings and programs, refer to the Graduate Catalog.

Biological Sciences Department

Professors Campbell (Chair), Dimopoullos, Modlin, Young; Associate Professors Eley, Garstka, Lawton, Moriarity; Associate Research Professor Van Alstine; Assistant Professor Johnson.

A student may elect a program leading to either a Bachelor of Arts or a Bachelor of Science degree. In most areas of biological interest, a Bachelor of Science degree is deemed more desirable; however, a Bachelor of Arts degree may be preferred in Programs of Study relating biological sciences to some of the humanities, social sciences, and economics.

Biological Sciences Major

The biological sciences program must include BYS 112, 113, and 114 or the equivalent. A major in biological sciences includes the following core courses:

a. One course in anatomy and physiology chosen from the following: BYS 221, 313/314, 315, 317, 371, 372, 378, 544, or 571.

b. One course in physiology chosen from the following: BYS 313/314, 435, 531, 532, or 561.

c. General genetics (BYS 319)

d. One course in biochemistry, which may be included in major or minor as BYS or CH.

e. One credit hour of seminar to be taken during the junior or senior year.

BYS 313 or 314 each can satisfy only the anatomy or the physiology requirement. BYS 313 and 314 together can meet both the anatomy and physiology core requirements. A minimum of 26 semester hours above the 100 level is required for a major in biological sciences and may be taken in accordance with the individual student’s goal.

Curricula are available for students who elect premedical technology, pre-health professional, graduate preparatory, environmental science, or secondary education programs. Examples of programs of study which fulfill the University’s degree requirements and achieve diverse goals in the biological sciences are shown below. Any curriculum may be modified to fit individual aims with approval of the biology faculty.

All B.S. degree programs in biological sciences include 8 semester hours of physics (PH 101/102, or 111/112), CH 113 or 331, CH 223, one biochemistry course in the major or minor, and 3 semester hours of Level III mathematics (calculus). Biological science majors are encouraged to take at least one course in statistics (AHS 300 or ST 281).
Biological Sciences Minor

A minor in biological sciences includes BYS 112, 113, 114, and 319, plus selected coursework in anatomy, physiology, and biochemistry by electing Option A or Option B:

Option A:
1. Select one: BYS 221, 317, 340, 372, or 378 and
2. Select one: BYS 301, 318, 430, 435, or 436

Option B:
BYS 313 and 314

Additionally, CH 101, 105, and 113 are required ancillary courses for a biological sciences minor. A course in biochemistry (BYS or CH 301) supports the minor but is not required.

Example I

B.A. degree with a psychology minor (psychobiology program)

<table>
<thead>
<tr>
<th>Biological sciences core courses and biological sciences electives</th>
<th>26 min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 101, 105, 113, or 331, 301</td>
<td>8-11</td>
</tr>
<tr>
<td>Psychology 101, 102, 302, 436 plus electives</td>
<td>21</td>
</tr>
<tr>
<td>Physics</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3-6</td>
</tr>
<tr>
<td>GER and electives</td>
<td>As req.</td>
</tr>
</tbody>
</table>

Example II

B.A. or B.S. degree for secondary education.

<table>
<thead>
<tr>
<th>Biological sciences core courses and electives to include BYS 312</th>
<th>26 min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry (to include 113, or 331, and 361, depending on B.A. or B.S.)</td>
<td>8-22</td>
</tr>
<tr>
<td>Mathematics (depending on placement and B.A. or B.S.)</td>
<td>3-9</td>
</tr>
<tr>
<td>Physics 101 and 102 (depending on B.A. or B.S.)</td>
<td>4-8</td>
</tr>
<tr>
<td>Second teaching area</td>
<td>27</td>
</tr>
<tr>
<td>Professional education courses</td>
<td>33</td>
</tr>
<tr>
<td>GER</td>
<td>As req.</td>
</tr>
</tbody>
</table>

NOTES:
1. This curriculum may require more than the minimum 128 total semester hours.
2. Students considering this curriculum should consult the Department of Education early in their program.
3. A general sciences composite major covering the areas of chemistry, biological sciences, environmental sciences and physical sciences is possible under this curriculum. Interested students should consult the Biological Sciences or Education Departments.

Example III

B.S. degree with emphasis in biochemistry.

<table>
<thead>
<tr>
<th>Biological sciences core courses and 221, 361, 362, 363, 365, 519, and 543</th>
<th>26 min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, (345 and 347 desirable)</td>
<td>21-25</td>
</tr>
<tr>
<td>Mathematics 153, 154</td>
<td>6</td>
</tr>
<tr>
<td>Physics 111/114 and 112/115</td>
<td>8</td>
</tr>
<tr>
<td>GER and electives</td>
<td>As req.</td>
</tr>
</tbody>
</table>
### Example IV

B.S. degree, premedical, predental, preveterinary.  

<table>
<thead>
<tr>
<th>Biological sciences core courses and biological sciences electives</th>
<th>26 min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(to include 317, 361, 363, 543, 544, and 545)</td>
<td></td>
</tr>
<tr>
<td>Chemistry 121, 123, 125, 126, 223, 331, 332, 333, 335, 336</td>
<td></td>
</tr>
<tr>
<td>(341 desirable)</td>
<td></td>
</tr>
<tr>
<td>Mathematics 153 (MA 154 for PH 112)</td>
<td>3</td>
</tr>
<tr>
<td>Physics 111/114 and 112/115</td>
<td>8</td>
</tr>
<tr>
<td>GER and electives</td>
<td>As req.</td>
</tr>
</tbody>
</table>

### Example V

B.S. degree, microbiology emphasis, preparatory for: (a) the National Registry Examination for Registered Microbiologists (American Academy of Microbiology); or (b) graduate study in microbiology.  

| Biological sciences core courses and 221, 421, 430, 435, 521, 525 | 34 |
| Mathematics (depending on placement)                              | 3-9|
| Physics 101, 102, or 111/114 and 112/115                            | 8  |
| Chemistry 121, 123, 125, 126, 223, 331, 332, 335, 361, 362          | 22 |
| GER and electives                                                  | As req. |

### Example VI

B.S. degree, medical technology emphasis, preparatory for the Medical Technologist certification examinations of the National Certification Agency for Medical Laboratory Personnel and the Board of Registry of the American Society of Clinical Pathologists. This curriculum satisfies academic requirements for a B.S. degree in biological sciences with a medical technology emphasis. It is offered with the cooperating clinical laboratories in the School of Health Related Professions at the University of Alabama at Birmingham (UAB). The degree program is accomplished in three phases: (I) completion of academic prerequisite courses during the preclinical phase at UAH, (II) completion of medical technology courses at UAB during summer, fall and winter terms, with the transfer of credits back to UAH, and (III) completion of clinical practice courses at the cooperating clinical laboratories during the spring and summer terms, with transfer of credits to UAH. Upon satisfactory completion of these three phases of the program, the B.S. degree in biological sciences with emphasis in medical technology is awarded by UAH. The candidate is then eligible to apply for certification as a medical technologist. Enrollment in the UAH phase does not automatically grant admission to the UAB phase; however, a student who has earned a UAH grade point average of 2.5 or better, has earned a C or better in all BYS and CH courses, and has been recommended by the chair of the Department of Biological Sciences will automatically be accepted into the UAB phase upon application. The application deadline is January 15. Applications received after January 15 are considered on a space available basis. The three phases of the curriculum are outlined below. Students must consult with an advisor during their first semester at UAH.

#### Phase I, UAH  

| Biological sciences 221, 313, 314, 319, 320, 361, 362, 421, seminar | 26 |
| Physics 101, 102                                                | 8  |
| Mathematics (depending on placement)                            | 9  |
| Chemistry 121, 123, 125, 126, 223, 331, 332, 335                  | 18 |
| Computer Science 108                                             | 3  |
| Statistics (if not taken as math requirement)                   | 3  |
| GER                                                              | As req. |
### Phase II, UAB (see UAB catalog for course descriptions)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>MT 300</td>
<td>Laboratory Techniques</td>
<td>2</td>
</tr>
<tr>
<td>MT 301</td>
<td>Lab Math</td>
<td>1</td>
</tr>
<tr>
<td>MT 302</td>
<td>Urinalysis</td>
<td>2</td>
</tr>
<tr>
<td>MT 320</td>
<td>Clinical Chemistry I</td>
<td>7</td>
</tr>
<tr>
<td>MT 325</td>
<td>Clinical Immunology</td>
<td>3</td>
</tr>
<tr>
<td>MT 340</td>
<td>Hematology I</td>
<td>6</td>
</tr>
<tr>
<td>MT 330</td>
<td>Immunohematology</td>
<td>6</td>
</tr>
<tr>
<td>MT 335</td>
<td>Clinical Myology/Parasitology</td>
<td>3</td>
</tr>
<tr>
<td>MT 336</td>
<td>Clinical Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>MT 402</td>
<td>Hemostasis</td>
<td>2</td>
</tr>
<tr>
<td>MT 405</td>
<td>Laboratory Management I</td>
<td>2</td>
</tr>
<tr>
<td>MT 420</td>
<td>Clinical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>MT 421</td>
<td>Clinical Chemistry III</td>
<td>3</td>
</tr>
<tr>
<td>MT 430</td>
<td>Immunohematology II</td>
<td>2</td>
</tr>
<tr>
<td>MT 436</td>
<td>Clinical Microbiology II</td>
<td>6</td>
</tr>
<tr>
<td>MT 437</td>
<td>Clinical Microbiology III</td>
<td>3</td>
</tr>
<tr>
<td>MT 440</td>
<td>Hematology II</td>
<td>3</td>
</tr>
<tr>
<td>MT 490</td>
<td>Health Care Issues</td>
<td>2</td>
</tr>
<tr>
<td>MT 495</td>
<td>Basic Research Concepts</td>
<td>4</td>
</tr>
</tbody>
</table>

### Fall and Winter:

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>MT 300</td>
<td>Laboratory Techniques</td>
<td>2</td>
</tr>
<tr>
<td>MT 301</td>
<td>Lab Math</td>
<td>1</td>
</tr>
<tr>
<td>MT 302</td>
<td>Urinalysis</td>
<td>2</td>
</tr>
<tr>
<td>MT 320</td>
<td>Clinical Chemistry I</td>
<td>7</td>
</tr>
<tr>
<td>MT 325</td>
<td>Clinical Immunology</td>
<td>3</td>
</tr>
<tr>
<td>MT 340</td>
<td>Hematology I</td>
<td>6</td>
</tr>
<tr>
<td>MT 330</td>
<td>Immunohematology</td>
<td>6</td>
</tr>
<tr>
<td>MT 335</td>
<td>Clinical Myology/Parasitology</td>
<td>3</td>
</tr>
<tr>
<td>MT 336</td>
<td>Clinical Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>MT 402</td>
<td>Hemostasis</td>
<td>2</td>
</tr>
<tr>
<td>MT 405</td>
<td>Laboratory Management I</td>
<td>2</td>
</tr>
<tr>
<td>MT 420</td>
<td>Clinical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>MT 421</td>
<td>Clinical Chemistry III</td>
<td>3</td>
</tr>
<tr>
<td>MT 430</td>
<td>Immunohematology II</td>
<td>2</td>
</tr>
<tr>
<td>MT 436</td>
<td>Clinical Microbiology II</td>
<td>6</td>
</tr>
<tr>
<td>MT 437</td>
<td>Clinical Microbiology III</td>
<td>3</td>
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<tr>
<td>MT 440</td>
<td>Hematology II</td>
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<tr>
<td>MT 490</td>
<td>Health Care Issues</td>
<td>2</td>
</tr>
<tr>
<td>MT 495</td>
<td>Basic Research Concepts</td>
<td>4</td>
</tr>
</tbody>
</table>

### Phase III, Cooperating Clinical Laboratories

#### Spring and Summer

**Example VII**

B.S. degree, environmental biology emphasis, preparatory for graduate study in ecology or environmental science.

- Biological sciences core courses, biological sciences electives, and 221, 312, 371 or 378, and two from BYS 561, 562, 563 and 564: 30
- Chemistry 121, 123, 125, 126, 223, 331, 332, 335, 361, 362: 22
- Physics 101, 102, or 111/114 and 112/115: 8
- Mathematics 153: 3
- Environmental science 102: 4
- Computer science 108, 208: 6
- Statistics: 3
- GER and electives: As req.

**Example VIII**

B.S. degree, composite major in biological-environmental sciences. An additional 6 hours from advanced ES courses with this program qualifies student for an environmental science certificate. Students should also see the Environmental Science section of this catalog.

- Biological sciences 112, 113, 114, 221, 312, 319, and MS 507, BYS 531, or BYS 561: 27
- Environmental sciences 101, 102, 303 or 304, 312, 321: 18
- Mathematics 153: 3
- Physics 101, 102, or 111/114 and 112/115: 8
- Chemistry 121, 123, 125, 126, 223, 331, 332, 335, 361, 362: 22
BYSelectives 12-14
One from 315, 317, 378 4-5
One from 562, 563, 564 4
One from 364, 371, 372 4-5
Computer science 108 3
Statistics (AHS 300 or ST 281) 3
GER (ECN or PSC recommended) As req.

Courses in Marine Sciences
Select courses in marine sciences, available through the Marine Environmental Sciences Consortium, may be taken for credit at UAH toward a biological sciences major or minor, a minor in marine sciences, or a Master of Science degree in biological sciences. Biological sciences majors electing a marine sciences minor generally would not take MS courses in the minor that were principally biologically oriented. Courses for which credit is not given for a biological sciences major or minor can be taken as electives. All programs of study that involve marine sciences courses must be approved by the MESC-UAH liaison officer.

Biological Sciences (BYS)

100 Introduction to Health Professions 1 hr.
Career options for undergraduate students interested in health professions. Basics of health-care delivery systems and terminology of health care. Primarily for freshmen and sophomores. No BYS major or minor credit. (Same as MED 100).

112 General Biology 4 hrs.
Introduction to biological principles: cellular and subcellular structure and function; introduction to biological chemistry and molecular biology including photosynthesis, glycolysis, Kreb’s cycle, protein and fatty acid synthesis; cell reproduction and gametogenesis (meiosis); principles and applications of Mendelian genetics; concepts of evolution; taxonomic principles in the classification of plants and animals. One lab per week. Lab Fee: Level 4.

113 General Botany 4 hrs.
Biological principles related to the plant kingdom; cells, tissues and functional anatomy of plants. Prerequisite: BYS 112. One lab a week. Lab Fee: Level 4.

114 General Zoology 4 hrs.
Biological principles related to the animal kingdom; biological organization of animals; structure and function of musculo-skeletal, respiratory, cardiovascular, digestive, excretory, nervous and endocrine systems; homeostasis; reproduction and development; ecological principles; animal phylogeny. One lab per week. Prerequisite: BYS 112. Lab Fee: Level 4.

214 Infection and Immunity 4 hrs.
Principles of microbiology with emphasis on infectious disease of humans; epidemiological and immunological aspects. No credit for students who have credit for BYS 221 or advanced microbiology courses. Recommended for students in the College of Nursing. Prerequisites: BYS 114, CH 101. Two 2-hour labs a week. Lab Fee: Level 5.

221 General Microbiology 4 hrs.
Cultivation and observation of micro-organisms and their relation to foods, water, and industrial processes, environment and disease. Two 2-hour labs a week. No credit for students who have completed BYS 214. Take no later than sophomore year. Prerequisites: BYS 112, 114; CH 101 or 121. Lab Fee: Level 5.
Local Flora 2 hrs.
Laboratory course with basic taxonomical procedures and determination of local angiosperms, primarily dicots. Basics of classification techniques and process of speciation. Field trips required. Lab Fee: Level 3.

Elementary Biochemistry 3 hrs.
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, nutrition, drugs and biochemistry of specialized tissues. Prerequisites: BYS 114 and CH 113 or 331. (Same as CH 301.)

Principles of Ecology 4 hrs.
Ecological principles controlling plant and animal populations. Development of ecosystems, communities, and habitats. Prerequisites: BYS 112, 113, 114, CH 121. One four-hour lab a week. Lab Fee: Level 4. Field trip required.

Anatomy and Physiology I 4 hrs.
Structure and function of the human body. Physiology and anatomy of major organs, organ systems, and their interactions. Not for students preparing for professional schools or graduate study in physiology or development. Prerequisites: BYS 114, CH 101, and 105 (CH 113 recommended). One lab a week. Lab Fee: Level 5.

Anatomy and Physiology II 4 hrs.
Continuation of BYS 313 stressing structural and functional relationships of major organs, organ systems, and their interdependent regulation. Not for students preparing for professional schools or graduate study in physiology or development. Prerequisites: BYS 313, CH 101 and 105 (CH 113 recommended). One lab a week. Lab Fee: Level 5.

Ichthyology 4 hrs.
Classification, anatomy, physiology, and ecology of freshwater and marine fishes. Emphasis on fishes of north Alabama. Laboratory and field trips required. Prerequisite: BYS 114. Lab Fee: Level 4.

Vertebrate Zoology 5 hrs.
Morphology of vertebrate animals. Relationship of organs and systems and their phylogenetic significance. Prerequisite: BYS 114. Two three-hour labs a week. Lab Fee: Level 5.

Vertebrate Reproduction 3 hrs.
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. Prerequisite: BYS 114 or 313.

General Genetics 3 hrs.
Hereditary basis of all living organisms, including the study of (a) genes - the discrete nature of inheritance, (b) genes in organisms and (c) genes in populations. Mendelian principles and evolutionary processes. Includes replication, transcription and translation of DNA and RNA. Prerequisites: BYS 112 and CH 121.

Genetics Laboratory 1 hr.
Practical applications of modern genetic techniques. Prerequisite or concomitant: BYS 319. Two 2-hour labs a week. Lab Fee: Level 5.

Introduction to Cellular and Developmental Biology 4 hrs.
Modern approach to embryology relating cell structure and function to mechanisms involved in development. Prerequisites: BYS 112, CH 113 or 331. BYS 319 recom-
mended. It is strongly recommended that biological sciences majors and preprofessional students take BYS 543, 544, and 545 instead of BYS 340. Two 2-hour laboratories per week. Lab Fee: Level 5.

361 General Biochemistry 3 hrs.
Molecules that comprise living systems: their nomenclature, structure, properties, and functions in metabolism. Enzymatic properties and function, major and minor biosynthetic and catabolic pathways, their interrelations and control mechanisms. Glycolysis and gluconeogenesis, Kreh's cycle, photosynthesis, lipids, amino acids, proteins, and nucleic acids. Prerequisites: BYS 114, CH 332, and CH 335. (Same as CH 361).

362 General Biochemistry Laboratory 1 hr.
Practical experience in isolation, qualitative identification, and quantitative estimation of biomolecules. Prerequisite or parallel: CH 361. Prerequisite: CH 223. One 4-hour lab a week. Lab Fee: Level 6. (Same as CH 362).

363 General Biochemistry II 3 hrs.
A continuation of BYS 361 to include biosynthesis of biomolecules, metabolism, DNA and RNA, the genetic code, protein biosynthesis, genes and molecular physiology. Prerequisite: BYS 361. (Same as CH 363).

364 Biogeography 3 hrs.
Principles of plant and animal distribution and dispersal, using the communities of North America as prime examples. Prerequisites: BYS 113, 114, 312 recommended.

365 General Biochemistry Laboratory II 1 hr.
Experimental course illustrating the topics in BYS 363. Prerequisite: BYS 361 and BYS 362. Parallel BYS 363. Lab Fee: Level 4. (Same as CH 364).

371 Nonvascular Cryptogamic Botany 5 hrs.
Introduction to the biology of ray fungi, cellular and slime molds, fungi, algae, lichens, liverworts, hornworts, and mosses, emphasizing their ontogeny, structure, and phylogenetic lines of development. Prerequisite: BYS 113. Two 3-hour labs a week. Lab Fee: Level 5.

372 Biology of Vascular Plants 5 hrs.
Comparative anatomy and morphology of vascular plants and their relationship in various phylogenetic lines of development. Vascular cryptogams as well as ferns, gymnosperms, and angiosperms. Not a field course. Prerequisite: BYS 113. Two 3-hour labs a week. Lab Fee: Level 4.

378 Invertebrate Zoology 5 hrs.
Invertebrate phyla emphasizing anatomy, morphology, physiology, embryology, ecology, and phylogenetic relationships. Prerequisite: BYS 114. Two 3-hour labs a week. Lab Fee: Level 5.

421 Introduction to Medical Microbiology 5 hrs.
Medically significant microorganisms and their relation to human diseases. Bacterial, fungal, and viral agents and their properties, pathogenesis, and laboratory diagnosis. Prerequisites: BYS 221, BYS or CH 361, and BYS 430 recommended. Two 3-hour labs a week. Lab Fee: Level 5.

430 Immunology 4 hrs.
Basic course in immunology. Immunoglobulins, antigens, immune responses, complement, immediate and cell-mediated hypersensitivities, transplantation and tumor immunology. Prerequisites: BYS 221. BYS 319 and BYS/CH 361 strongly recommended. One 4-hour lab a week. Lab Fee: Level 5.

435 Bacterial Physiology and Metabolism 4 hrs.
Aspects of bacterial physiology such as nutrition, growth, energy, and biosynthetic mechanisms of bacteria. Prerequisite: BYS 221. Biochemistry strongly recommended. One 4-hour lab a week. Lab Fee: Level 5.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>436</td>
<td>Physiological Psychology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Functional analysis of neural and endocrine</td>
<td></td>
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<td></td>
<td>systems underlying behavior.</td>
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<tr>
<td></td>
<td>Prerequisites: (either a or b): (a) 15 hrs. of</td>
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<tr>
<td></td>
<td>PY or approval of instructor; (b) BYS 114 or</td>
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<td></td>
<td>313, and 6 hrs. of PY or approval of instructor.</td>
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<td>(Same as PY 436).</td>
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<tr>
<td>464</td>
<td>Evolution</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Principles of evolution and speciation. Nature</td>
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<tr>
<td></td>
<td>of species, divergence, isolation, and</td>
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<td></td>
<td>hybridization. Taxonomic methodology.</td>
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<tr>
<td></td>
<td>Prerequisites: BYS 113, 114, 319; BYS 312</td>
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<tr>
<td></td>
<td>recommended.</td>
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<tr>
<td>490</td>
<td>Seminar</td>
<td>1 hr.</td>
</tr>
<tr>
<td></td>
<td>Student discussions and presentations of</td>
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<tr>
<td></td>
<td>biological literature from current library</td>
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<tr>
<td></td>
<td>monographs and journals. Prerequisite: junior</td>
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</tr>
<tr>
<td></td>
<td>standing. Pass/fail grading. Biological</td>
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<tr>
<td></td>
<td>sciences major requirement, one seminar. No</td>
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<tr>
<td></td>
<td>more than 3 seminar credits can count in</td>
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<tr>
<td></td>
<td>biological sciences major. May be taken at the</td>
<td></td>
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<tr>
<td></td>
<td>Marine Environmental Sciences Consortium.</td>
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<tr>
<td>491</td>
<td>Special Topics in Biological Sciences</td>
<td>1-4 hrs.</td>
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<tr>
<td></td>
<td>Literature search relative to topics of special</td>
<td></td>
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<td></td>
<td>interest under direct supervision of instructor.</td>
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<tr>
<td>492</td>
<td>Undergraduate Research</td>
<td>2-4 hrs.</td>
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<tr>
<td></td>
<td>Individual investigations into biological</td>
<td></td>
</tr>
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<td></td>
<td>problems under direct supervision of instructor.</td>
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<tr>
<td></td>
<td>For advanced-level biological sciences students</td>
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<tr>
<td></td>
<td>with biological sciences GPA of 3.5 or above.</td>
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<td></td>
<td>May be taken at the Marine Environmental Sciences</td>
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<tr>
<td></td>
<td>Consortium, Dauphin Island, Alabama. Prerequisite:</td>
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<td></td>
<td>approval of instructor. Lab Fee: Level 3 for 2</td>
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<tr>
<td></td>
<td>hours, Level 4 for 3 hours, and Level 5 for 4</td>
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<tr>
<td></td>
<td>hours.</td>
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</tr>
<tr>
<td>Advanced Undergraduate - Graduate Courses</td>
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</tr>
<tr>
<td>501</td>
<td>Gravitational Biology</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Basic studies of responses of plants and</td>
<td></td>
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<tr>
<td></td>
<td>animals to microgravity. Emphasis on effects of</td>
<td></td>
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<tr>
<td></td>
<td>low-gravity at the cellular level, including</td>
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<td>cell physiology, metabolism, structure,</td>
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<td>signal transduction mechanisms of gravity</td>
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<td></td>
<td>sensing, and issues of human gravitational</td>
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<tr>
<td></td>
<td>physiology. Description of organisms and</td>
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<tr>
<td></td>
<td>summary of biological space flight experiments.</td>
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<tr>
<td></td>
<td>Prerequisites: BYS 112, 114, 214 or 221, 301 or</td>
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<td></td>
<td>361, and 543 recommended, or permission of</td>
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<tr>
<td>519</td>
<td>Gene Structure and Function</td>
<td>3 hrs.</td>
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<tr>
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<td>Molecular basis for inheritance and gene</td>
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<td>expression. Advanced studies of replication,</td>
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<td></td>
<td>transcription, translation. Includes regulation</td>
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<tr>
<td></td>
<td>of gene expression, gene cloning and recombinant</td>
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<td></td>
<td>DNA technology. Prerequisites: BYS 319 and</td>
<td></td>
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<tr>
<td></td>
<td>BYS/CH 361.</td>
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<tr>
<td>521</td>
<td>Medical Mycology</td>
<td>4 hrs.</td>
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<tr>
<td></td>
<td>Basic and applied studies of the various classes</td>
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<tr>
<td></td>
<td>of fungi pathogenic to humans; reproduction,</td>
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<tr>
<td></td>
<td>morphology, classification, classification of</td>
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<td></td>
<td>disease states, pathogenesis, laboratory</td>
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<td></td>
<td>diagnosis and chemotherapy. Prerequisite: BYS</td>
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<td>421; BYS 430 is recommended. Two 2-hour labs</td>
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<td></td>
<td>per week. Lab Fee: Level 4.</td>
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<tr>
<td>525</td>
<td>Medical Parasitology</td>
<td>4 hrs.</td>
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<tr>
<td></td>
<td>Basic and applied studies of the various classes</td>
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<tr>
<td></td>
<td>of parasites pathogenic to humans and</td>
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<td></td>
<td>their laboratory identification. Arthropods and</td>
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<td></td>
<td>their relationship as vectors of parasites.</td>
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<td></td>
<td>Immunology and chemotherapy of parasitism.</td>
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<tr>
<td></td>
<td>Prerequisite: BYS 221 or equivalent. Two 2-hour</td>
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<td>labs per week. Lab Fee: Level 3.</td>
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<tr>
<td>531</td>
<td>Plant Physiology</td>
<td>4 hrs.</td>
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<tr>
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<td>General introduction to life processes of</td>
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<tr>
<td></td>
<td>plants, including water relations, mineral</td>
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<td></td>
<td>utilization, metabolism, photosynthesis,</td>
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<td></td>
<td>digestion, respiration, assimilation, and</td>
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<td>growth as affected by growth hormones.</td>
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<td>Prerequisites: BYS 113, 371 or 372, CH 113 or</td>
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<td></td>
<td>331. One 3-hour lab a week. Lab Fee: Level 3.</td>
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<tr>
<td>Course Name</td>
<td>Credits</td>
<td>Description</td>
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<tr>
<td>Animal Physiology</td>
<td>4 hrs.</td>
<td>Basic course in organismal function. Membrane physiology and transport phenomena, muscle, nerve, synapse, and sensory receptor physiology. Physiology of respiration, heart, circulation, kidney, and endocrine system. Emphasis on regulation. One laboratory session a week illustrating physiological principles discussed in lecture. Prerequisites: senior classification with a major or minor in BYS; BYS 317 and 16 hours completed in POS, CH 113 or 331 or graduate standing. Lab Fee: Level 4.</td>
</tr>
<tr>
<td>Cellular and Developmental Biology</td>
<td>3 hrs.</td>
<td>Cellular structure and function including mitosis, meiosis, cell cycle, and cell signaling. Discussion of biological techniques such as tissue culture, hybridoma and monoclonal antibody production, gene cloning and recombinant DNA, radiotracer methodology, and specialized microscopy. Prerequisites: BYS 112, 114, 319, and 331 (may be taken concomitantly).</td>
</tr>
<tr>
<td>Biochemistry I</td>
<td>3 hrs.</td>
<td>Structural chemistry and function of biomolecules, mechanisms of biochemical reactions, enzyme kinetics, and energy transfer. Prerequisite: CH 333 or CH or BYS 363. (Same as CH 561).</td>
</tr>
<tr>
<td>Biochemistry II</td>
<td>3 hrs.</td>
<td>Metabolism, biosynthesis of macromolecular precursors, storage, transmission, expression of genetic information, and molecular physiology. Prerequisite: CH 561 or BYS 547. (Same as CH 562).</td>
</tr>
<tr>
<td>Physiological Ecology</td>
<td>4 hrs.</td>
<td>Physiological and behavioral responses of organisms to natural changes in their chemical and physical environment. Prerequisite: BYS 312 or approval of instructor. BYS 361 or 532 recommended. Lab Fee: Level 3.</td>
</tr>
<tr>
<td>Community Ecology</td>
<td>4 hrs.</td>
<td>Detailed consideration of ecological principles and concepts, as well as biotic and abiotic factors relative to development of plant communities and ecosystems. Prerequisites: BYS 312 and taxonomy. One 4-hour lab a week. Lab Fee: Level 3. Field trips required.</td>
</tr>
<tr>
<td>Limnology</td>
<td>4 hrs.</td>
<td>Fresh-water environments and organisms exemplified by lakes, ponds, and streams in north Alabama. Laboratory and required field trips. Occasional Saturday field trips required instead of week's laboratory session. Prerequisites: BYS 312 and 378. One 4-hour lab a week. Lab Fee: Level 4.</td>
</tr>
</tbody>
</table>
### Plant Anatomy

**571**

Ontogeny, differentiation, and maturation of tissues and organs of angiosperms. Problems in growth and development of an angiosperm, using histological techniques. Prerequisite: BYS 372 or approval of instructor. Two 3-hour labs a week. Lab Fee: Level 4.

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### Aquatic Arthropod Biology

**578**

Systematics, physiology, ecology and importance of the crustacea, insecta and arachnida that inhabit freshwater and estuarine ecosystems. Particular attention will be given to those arthropods common to the aquatic systems in and around Alabama. Since all field trips are required, prospective students should consult with the instructor prior to registration. Prerequisite: BYS 378. Lab Fee: Level 4.

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### Marine Sciences (MS)

Courses are offered only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, Alabama. The following courses can be included in a biological sciences major or minor:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>202</td>
<td>Marine Biology</td>
<td>4 hrs.</td>
<td>Survey of invertebrates, vertebrates, and marine plants as communities with local examples of groups. Examination of marshland, estuarine, beach, dune inlet and neritic habitats, and niches. Lectures, laboratory, and field work. Prerequisite: general biology.</td>
</tr>
<tr>
<td>304</td>
<td>Coastal Zone Management</td>
<td>2 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>507</td>
<td>Physiology of Marine Animals</td>
<td>4 hrs.</td>
<td>Environmental adaptations of marine animals. Biochemical, osmotic, respiratory, and temperature responses of both invertebrates and fish. Prerequisite: 12 hours in biological sciences. Biochemistry recommended.</td>
</tr>
</tbody>
</table>
508 Marine Plankton 4 hrs.

509 Marine Ecology 4 hrs.
Bioenergetics, community structure, population dynamics, predation, competition, and speciation in marine ecosystems. Lecture, laboratory, and field work. 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 ecological backgrounds. Prerequisites: Introductory ecology. Chemistry and physics recommended; marine invertebrate zoology or marine biology helpful.

510 Marsh Ecology 4 hrs.
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. Prerequisite: Introductory ecology.

511 Benthic Community Structure 4 hrs.
Patterns of benthic macroinvertebrate abundance and distribution along Alabama coastline. Field sampling, taxonomy, and data analysis in lectures and labs. Major taxa such as polychaetes and crustaceans. Prerequisite: Invertebrate zoology.

512 Fisheries Science 4 hrs.
Principles and methods of marine fishery biology and their application to conservation. Lecture and laboratory work. Prerequisite: General biology.

513 Fisheries Economics 4 hrs.

515 Coastal Ornithology 4 hrs.
Coastal and pelagic birds with emphasis on ecology, taxonomy, and distribution. Food habits, field identification, and population dynamics. Prerequisite: Introductory zoology.

517 Marine Technical Methods III 2 hrs.
Advanced laboratory instrumentation and techniques; individual projects with one of the following: Liquid scintillation counting, electrophoresis, atomic absorption spectrophotometry, UV-visible spectrophotometry or fluorometry or other techniques. Prerequisites: science major; permission of instructor.

525 Marine Biology for Teachers 6 hrs.

599 Research 1-4 hrs.
Enrollment by special arrangement in any subjects listed. Prerequisite: Arrangements with and approval of project supervisor and liaison officer. Students should note which term to take special topics in a particular subject. Only Marine Science Program resident faculty are available for special topics both terms. Other instructors available only time listed for their courses.

The following courses cannot be taken for credit toward a biological sciences major or minor but can be used for a marine science minor.

203 Natural History of Commercial Invertebrates 3 hrs.
Basic understanding of behavior, physiology, development and ecology of commercially important invertebrates. Some previous biology recommended. Labs, field trips, and lecture material. For non-majors.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Commercial Marine Fisheries of Alabama</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>301</td>
<td>Marine Technical Methods I</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>302</td>
<td>Marine Technical Methods II</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>303</td>
<td>Coastal Climatology</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>501</td>
<td>Introduction to Oceanography</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>514</td>
<td>Estuarine Science</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>516</td>
<td>Scientific Data Management</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>520</td>
<td>Marine Geology</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>521</td>
<td>Recent Marine Sedimentation</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>522</td>
<td>Marine Paleocology</td>
<td>4 hrs.</td>
</tr>
</tbody>
</table>

**Chemistry Department**

University Professor: Wright; Professors Baird, Gregory, Harris, Loo, McManus, Riley (Chair); Associate Professors Coble, Emerson, Leslie, Meehan, Setzer; Assistant Research Professor Kaukler; Assistant Professors Lumpkin, Weimer.

The academic program in chemistry at the University of Alabama in Huntsville has received the approval of the American Chemical Society in recognition of its strong faculty and excellent facilities for high quality undergraduate instruction. The Chemistry Department offers courses.
leading to the B.S. degree with major in chemistry and supports undergraduate programs in other disciplines.

Six chemistry major curricula are offered which provide preparation for: (1) medical school, dental school, or veterinary school; (2) the Alabama Class B High School Teacher's Certificate; (3) graduate study in chemistry and/or employment as an industrial chemist; (4) general education in chemistry; (5) graduate study combining chemistry and physics; and (6) employment as a biochemist or clinical chemist.

Chemistry Major

Requirements for the chemistry major include:

1. The minimum total semester hours required for the B.S. is 128. Of these, at least 39 semester hours must be in courses numbered 300 or higher.
2. Mastery of elementary calculus by successful completion of MA 153 and 154.
3. Successful completion of PH 111 and 112.
4. Completion of the university's General Education Requirements (GER). For a chemistry major, the GER requirement (see note [a] below) consists of the following:
   - English (6 hours of composition and 6 hours of literature) 12 hours
   - History (HY 101 and HY 102) 6 hours
   - Social Science (one discipline) 6 hours
   - Fine Arts 6 hours
   - Mathematics (MA 153) (see note [b] below) 3 hours
   - Foreign Language and Communication Skills
     - This requirement may be satisfied by choosing either
       - (1) Foreign language up to 12 hours
         - One language, usually German or Russian. If the language has not been studied previously, the full 12 hours will be required.
       - or
       - (2) Communication skills (CS 108 or 113; CM 113; EH 301) 9 hours
   - Laboratory Science and Technical Studies (see note [c] below)
     - (1) Two courses in a single laboratory science outside the major and the minor (see note [d] below) 8 hours
     - and
     - (2) Coursework (to include at least one laboratory science) in any department or program (outside the major and the minor) in the Colleges of Science and/or Engineering (see note [e] below) 7-8 hours

Notes: [a] The section of the catalog dealing with the GER requirements for B.S. degree should also be consulted for details.
[b] If the student's minor is mathematics, this requirement is waived.
[c] Applicable laboratory sciences are astronomy, biological sciences, environmental science, physics, and some courses in the College of Engineering.
[d] Ordinarily met by taking PH 111 and PH 112.
[e] Ordinarily met by taking PH 113 and 116 and 3-4 hours of an applicable laboratory science or mathematics. If the minor is not mathematics, then PH 113, 116, and MA 154 satisfy this requirement.
5. Completion of a minor consisting of at least 21 hours of course work in any subject other than chemistry. The course requirements for minors can be found in the sections of this catalog dealing with the various departments. An educationally compatible combination of courses from more than one department can be substituted for the minor. This is called Cognate Studies.
6. Completion of sufficient electives to meet the overall minimum hour requirements for the degree.
7. Completion of one of the six chemistry curricula shown below, or another developed in consultation with a Chemistry Department advisor. The student is allowed considerable flexibility in planning an individual program, but all course patterns that differ from those listed below require faculty approval.

Curriculum I Premedical Program
The premedical program conforms to the requirements of most medical schools and contains sufficient chemistry to meet the requirements of a chemistry major. Prospective medical students should explore their areas of interest outside of the sciences and strive for maximum scholastic achievement. Students should consult with the Preprofessional Advisory Committee early in their college program and prepare to take the Medical College Aptitude Test during the spring of their junior year. (For alternative premedical curricula, see Chemistry Curriculum VI and Biological Sciences Example IV.)

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences) .................................................. 54-58</td>
</tr>
<tr>
<td>Chemistry - CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 341, 342, 343, 345 plus 6 hours at the 300 level or above ........................................... 35</td>
</tr>
<tr>
<td>Physics – PH 113 .................................................................................... 3</td>
</tr>
<tr>
<td>Mathematics – MA 233, 244, 251, and 352 ................................................... 12</td>
</tr>
<tr>
<td>Biological Sciences – BYS 112, 114, 319, 361 and 362 are recommended.</td>
</tr>
</tbody>
</table>

Curriculum II Class B High School Teacher’s Certificate
B.S. degree with major in chemistry. This plan meets the requirements for an Alabama Class B High School Teacher’s Certificate.

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences) .................................................. 54-58</td>
</tr>
<tr>
<td>Chemistry - CH 121, 123, 125, 126, 223, 315, 331, 332, 333, 335, 336, 361, 362, 347, and 348 ............................... 33</td>
</tr>
<tr>
<td>Physics – PH 113 .................................................................................... 3</td>
</tr>
<tr>
<td>Mathematics – MA 233 .......................................................................... 3</td>
</tr>
<tr>
<td>Biological sciences (minimum requirements) ........................................... 4</td>
</tr>
<tr>
<td>Second teaching area ............................................................................ 27</td>
</tr>
<tr>
<td>Professional education courses ............................................................ 33</td>
</tr>
</tbody>
</table>

NOTES:
1. This curriculum will probably require more than the minimum total of 128 hours.
2. Students pursuing this curriculum should consult with the Department of Education early in their program.
3. A general sciences composite major covering the areas of chemistry, biological sciences, environmental science and physical sciences is possible under this curriculum. Interested students should consult the Education Department.

Curriculum III Graduate Preparatory Program
This curriculum is approved by the American Chemical Society’s Committee on Professional Training. It is designed for a student who plans to do graduate work or desires an industrial position that requires a strong chemical background. German is the recommended language for this program.
**Curriculum IV General Education Curriculum**

General education curriculum with a chemistry major. Deficiencies may exist with respect to graduate school entrance requirements.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>GER (humanities and social sciences)</th>
<th>54-58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry - CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 401, 402, 421, 493 plus 3 hours at the 300 level or above</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Physics - PH 113</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mathematics - MA 233, 244, 251, and 352</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>GER (humanities and social sciences)</th>
<th>54-58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry - CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 401, 402, 421 and either 493 or 553</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Physics - PH 113, 301, 302, 337, 431, 432</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Mathematics - MA 233, 244, 251, 352, and one elective</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

**Curriculum V Chemical Physics Curriculum**

Chemistry-Physics program appropriate for pregraduate education.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>GER (humanities and social sciences)</th>
<th>54-58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry - CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 401, 402, 421 and either 493 or 553</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Physics - PH 113, 301, 302, 337, 431, 432</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Mathematics - MA 233, 244, 251, 352, and one elective</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

**Curriculum VI Biochemistry Curriculum**

This curriculum is approved by the American Chemical Society’s Committee on Professional Training. It constitutes a typical chemistry-biological sciences program appropriate for employment in biochemistry or clinical chemistry and for admission to some Ph.D. granting graduate departments of biochemistry. Although less dependent on quantitative skills, this curriculum also provides a satisfactory foundation for admission to medical school.

Curriculum VI meets the minimum requirements of the American Association of Clinical Chemistry. A person completing one year of acceptable experience in clinical chemistry subsequent to the B.S. degree may apply for certification as a clinical chemical technologist. Further successful experience may lead to certification as a clinical chemist.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>GER (humanities and social sciences)</th>
<th>54-58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry - CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 345, 346, 347, 348, 361, 362, 363, 364, 401, 402, and 421</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Biological sciences - BYS 112, 114, 221, 319, 543 and 544</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Notes applying to all curricula above:

(a) Credit may be obtained for Chemistry 121, 123, 125, and 126 by making a satisfactory score on the CLEP examination. This examination is offered at various times during the year through the Office of Testing Services. Students pursuing credit by examination should consult the Chemistry Department before taking the examination. Credit is also granted to a student who submits a score of 3 or higher on the Advanced Placement Programs of the College Entrance Examination Board.
Transfer students wishing to major in chemistry must complete at least 9 semester hours of chemistry at the level of 300 or above at UAH. Courses in organic chemistry completed at the junior college level may be used to satisfy prerequisite requirements for upper level chemistry courses at UAH but do not count toward the hour requirements of the major.

No credit toward the chemistry major is given for CH 101, 105, or any mathematics course numbered lower than MA 153. A student requiring these courses should understand that the total credit hours of course work required to meet all the degree requirements may exceed the minimum of 128 hours required for the B.S. degree.

Unless attention is given to the sequence in which courses are scheduled, chemistry majors may experience difficulty in completing the required courses within a four year-period. Students should plan to take CH 223, 333, and all the mathematics and physics courses required by their chosen curriculum before the fall term of their junior year.

Chemistry Minors

Course sequences for students wishing to minor in chemistry require at least 21 hours of chemistry including 6 or more hours numbered 300 or above. Courses in organic chemistry completed at the junior college level may be used to satisfy hour and prerequisite requirements for upper level chemistry courses at UAH but do not count toward the 300-level requirements of the minor. Approved sequences are shown below. Others are subject to Chemistry Department approval.

1. CH 121, 125, 123, 126, 223, 331, 332, 333, 335, and 336 for premedical and predental students.
2. CH 121, 125, 123, 126, 223, 331, 332, 335, 361, 362 for some biology and medical technology majors.
3. CH 121, 125, 123, 126, 331, 332, 335, 341, 342, 343 for physics and mathematics majors.
4. CH 121, 123, 125, 126, 223, 331, 332, 335, 347 for biology majors taking BYS 361 and 362.

Chemistry (CH)

101 Introduction to Chemistry 3 hrs.
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. CH 101 does not count toward the chemistry major or minor. Chemistry majors or minors taking CH 101 get elective credit only. CH 101 may be used with CH 105 and CH 113 to fulfill the laboratory science requirement of the GER. No placement examination is required for enrollment in CH 101. The student may opt to take CH 101 even if he has achieved a satisfactory score on the placement examination for enrollment in CH 121. Prerequisite: MA 105 or 119 or mathematics Level II placement. Parallel: CH 105.

105 Introductory Chemistry Laboratory 1 hr.
Laboratory fundamentals and basic chemical principles. A student enrolled in a B.S. degree program who plans to take CH 121 and CH 125 and has had chemistry laboratory experience may be exempt from CH 105 by permission of Chemistry Department chair. CH 105 may not be counted toward the chemistry major or minor. Chemistry majors or minors receive only elective credit. Parallel: CH 101. Lab Fee: Level 4.

113 Elementary Organic Chemistry 4 hrs.
Nomenclature, structure, functional groups, and properties of organic compounds. Recommended for nursing majors, some biology minors, and as a sequence to CH
101 and 105 for an 8-hour laboratory science requirement for non-science majors. Not open to chemistry majors and minors. Laboratory included. Prerequisite: CH 101, 105; equivalent or placement examination. Lab Fee: Level 4.

121 General and Inorganic Chemistry
3 hrs.
For science and engineering majors. Properties of gases, liquids, solids, and solutions. Nature of the chemical bond, kinetics, chemical equilibrium, electrochemistry, thermochemistry. Chemical properties of elements, their periodic groups, and their compounds. Prerequisites: CH 101 or placement test and MA 105 or MA 119 or placement Level II mathematics: parallel: CH 125.

123 General and Inorganic Chemistry
3 hrs.
Continuation of 121 with in-depth study of topics listed. Prerequisite: CH 121. Parallel: CH 126.

125 General Chemistry Laboratory
1 hr.
Laboratory work complements the lecture material for CH 121. Parallel: CH 121. Lab Fee: Level 4.

126 Qualitative Inorganic Analysis Laboratory
1 hr.
Chemical equilibrium applied to the systematic separation and qualitative detection of the elements. Application of chemical and physical properties of numerous metal and complex ions and compounds. Parallel: CH 123. Lab Fee: Level 4.

223 Quantitative Analysis
4 hrs.
Background in fundamental quantitative analytical chemistry with an introduction to instrumentation. Data treatment, ionic equilibria, elementary electrochemical, spectrochemical, gravimetric, and volumetric techniques. Laboratory included. Lab Fee: Level 5. Prerequisite: CH 126.

301 Elementary Biochemistry
3 hrs.
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, nutrition, drugs and biochemistry of specialized tissues. Prerequisites: BYS 114 and CH 113 pr 331. No credit given to chemistry majors or minors. Credit in CH 361 precludes credit in CH 301. (Same as BYS 301).

315 Chemical Demonstrations
2 hrs.
Designed for elementary and secondary education majors involving development and presentation of demonstrations which illustrate important and exciting chemical principles. Prerequisites: CH 113 or 223 or permission of the instructor. Lab Fee: Level 3.

331 Organic Chemistry
3 hrs.
Chemistry of organic compounds. Synthetic methods, theory, and reaction mechanisms. Prerequisites: CH 123, 126; CH 223 recommended.

332 Organic Chemistry
2 hrs.
Continuation of CH 331. Prerequisite: CH 331.

333 Organic Chemistry
2 hrs.
Continuation of CH 332. Prerequisite: CH 332.

335 Organic Chemistry Laboratory I
1 hr.
Techniques of organic chemistry including synthesis, separation, and identification of organic compounds with use of chemical and spectroscopic methods. Prerequisite or parallel: CH 331. Lab Fee: Level 5.

336 Organic Chemistry Laboratory II
1 hr.
Continuation of CH 335. Prerequisite: CH 335. Prerequisite or parallel: CH 332. Lab Fee: Level 5.
Organic Chemistry Laboratory III 2 hrs.
Advanced organic chemistry laboratory treating reactions and techniques not covered in CH 335 and 336. Pursuit of a special open-ended problem by each student. Prerequisite: CH 336 and approval of instructor. Lab Fee: Level 6.

Chemical Thermodynamics 3 hrs.
Theory of classical thermodynamics and its application to the chemistry of solid, liquids, gases, and solutions. Prerequisites: CH 223, MA 251 and PH 112. Credit in CH 341 precludes credit in CH 347.

Chemical Dynamics 2 hrs.
Kinetic theory of gases, theory and formulation of rate equations, mechanisms of chemical reactions, and applications. Prerequisite: CH 343. Credit in CH 342 precludes credit in CH 348.

Introduction to Quantum Chemistry 2 hrs.
Quantum mechanical treatment of the chemical bond. Prerequisites: CH 341, PH 113, and MA 352.

Experimental Physical Chemistry I 1 hr.
Laboratory investigations into thermodynamics. Prerequisite: CH 223 and 341 or 347. Lab Fee: Level 5.

Experimental Physical Chemistry II 1 hr.
Laboratory investigations into kinetics and spectroscopy. Prerequisite: CH 345. Parallel: CH 342 or 348. Lab Fee: Level 6.

Biophysical Chemistry I 3 hrs.

Biophysical Chemistry II 3 hrs.

General Biochemistry I 3 hrs.
Detailed study of molecules that comprise living systems. Their nomenclature, structure, properties, and functions in metabolism. Enzymatic properties and function; major and minor biosynthetic and catabolic pathways, their interrelations and control mechanism. Glycolysis and gluconeogenesis, Kreb’s cycle, photosynthesis, lipids, amino acids and protein, and nucleic acids. Prerequisites: BYS 114, CH 332, and CH 335. (Same as BYS 361).

General Biochemistry Laboratory I 1 hr.
Practical experience in isolation, qualitative identification, and quantitative estimation of biomolecules. Prerequisite or parallel: CH 361. Prerequisite: CH 223. One 4-hour lab a week. Lab Fee: Level 6. (Same as BYS 362).

General Biochemistry II 3 hrs.
A continuation of CH 361 to include biosynthesis of biomolecules, metabolism, DNA and RNA, the genetic code, protein biosynthesis, genes and molecular physiology. Prerequisite: CH 361. CH 348 is recommended. (Same as BYS 363).

General Biochemistry Laboratory II 1 hr.
Experimental course illustrating the topics in CH 363. Prerequisites: CH 361 and CH 362. Parallel CH 363. Lab Fee: Level 5. (Same as BYS 365)

Inorganic Chemistry 3 hrs.
Fundamental topics in inorganic chemistry. Atomic structure, chemical bonding, periodic relationships, acid-base theories, nonaqueous solvents, and reaction mechanisms. Prerequisite or parallel: CH 342 or 348.
402 Inorganic Chemistry Laboratory 1 hr.
Laboratory techniques of inorganic chemistry including synthesis, purification, isolation, and identification of inorganic compounds. Prerequisite: CH 401. Lab Fee: Level 6.

421 Instrumental analysis 4 hrs.
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. Prerequisite: CH 346. Lab Fee: Level 6.

480 Selected Topics in Chemistry 1-3 hrs.
Special offerings to students in areas of interest not covered in present curriculum. Prerequisite: senior standing and approval of instructor.

491, 492, 493 Introduction to Chemical Research 1-3 hrs.
Personalized programs to round out the undergraduate curriculum of students with various goals. Prerequisite or parallel: CH 345 and senior standing. Approval of supervising faculty member and chemistry chair required. Registration utilizes last digit of course number to designate semester-hour credit. Student normally may elect only up to 6 hours. Lab Fee: Level 4 for CH 492, Level 5 for CH 493. No lab fee for CH 491.

Computer Science Department

Professors Davis (Chair), Hooper, Johannes, Shiva; Associate Professors Amin, Graves, Hinke, Ranganath, Richards, Rochowiak, Ryan; Assistant Professors Delugach, Israel, Meyer, Weisskopf, Ziebarth.

The computer science program at UAH prepares students to contribute to the rapidly changing world of computing. The program combines mathematical foundations with laboratory experiences to build a base of practical knowledge that provides the graduate with a knowledge of fundamentals combined with effective computing skills. The program is fully accredited by the Computer Science Accreditation Board (CSAB).

In support of this program the campus has a variety of computing equipment. The UAH campus is fully networked with a fiber optics backbone interconnecting all computing facilities and providing easy external access through major networks such as INTERNET. The department has four file servers, providing support to the networked Sun, DEC and PC labs within the department. PC labs are also distributed across the campus for easy access. The department has a microcomputing laboratory used for instruction in logic design and computer architecture.

The computer science program contains a core of courses and electives in a wide variety of interesting areas including artificial intelligence, graphics, formal foundations, architecture, theory of program development, UNIX, and languages such as Ada, C and FORTRAN. In order to obtain a degree in computer science, students are required to complete the general education requirements, the core computer science courses and electives, a minor in mathematics, and general electives. A double major in computer science and mathematics and additional minors in engineering or other fields can be accommodated in the curriculum. Computing lab fees are associated with almost all computer science courses. Extensive lab work is required in most courses and lab scheduling is flexible.

Computer Science Major

The minimum number of hours required for the B.S. degree with a major in computer science is 131, divided as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Instrumental analysis</td>
<td>4</td>
</tr>
<tr>
<td>Selected Topics in Chemistry</td>
<td>1-3</td>
</tr>
<tr>
<td>Introduction to Chemical Research</td>
<td>1-3</td>
</tr>
<tr>
<td>Computer Science</td>
<td>131</td>
</tr>
</tbody>
</table>
# General Education Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition (EH 101 and EH 102)</td>
<td>6</td>
</tr>
<tr>
<td>Origin and Development of Contemporary World (HY 101 and HY 102)</td>
<td>6</td>
</tr>
<tr>
<td>Foreign language/communication skills CS 108 and</td>
<td></td>
</tr>
<tr>
<td>(two 200 level foreign language courses) or (CM 113 and EH 301)</td>
<td>9</td>
</tr>
<tr>
<td>Literature (any one of the following sequences)</td>
<td></td>
</tr>
<tr>
<td>EH 205 and 206; EH 205 and 241; EH 205 and 230; EH 206 and 240; EH 230</td>
<td></td>
</tr>
<tr>
<td>and 240; EH 240 and 241; EH 250 and 251</td>
<td>6</td>
</tr>
<tr>
<td>Fine arts (6 hours from two of the following options)</td>
<td></td>
</tr>
<tr>
<td>ARH 100 or 101; MU 100 or 110; PHL 101, 202, or 311</td>
<td>6</td>
</tr>
<tr>
<td>Social &amp; behavioral sciences (6 hours in one discipline) economics,</td>
<td></td>
</tr>
<tr>
<td>political science, psychology, sociology</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics (MA 153)</td>
<td>3</td>
</tr>
<tr>
<td>Laboratory science</td>
<td></td>
</tr>
<tr>
<td>a. Physics 111/114 and 112/115</td>
<td>8</td>
</tr>
<tr>
<td>b. Coursework including at least one lab in any department in the</td>
<td></td>
</tr>
<tr>
<td>Colleges of Science or Engineering, excluding computer science and</td>
<td></td>
</tr>
<tr>
<td>mathematics</td>
<td>7-8</td>
</tr>
<tr>
<td>Fine arts (6 hours from two of the following options)</td>
<td></td>
</tr>
<tr>
<td>ARH 100 or 101; MU 100 or 110; PHL 101, 202, or 311</td>
<td>6</td>
</tr>
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<td>Social &amp; behavioral sciences (6 hours in one discipline) economics,</td>
<td></td>
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<tr>
<td>Laboratory science</td>
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</tr>
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<td>a. Physics 111/114 and 112/115</td>
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</tr>
<tr>
<td>b. Coursework including at least one lab in any department in the</td>
<td></td>
</tr>
<tr>
<td>Colleges of Science or Engineering, excluding computer science and</td>
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</tr>
<tr>
<td>mathematics</td>
<td>7-8</td>
</tr>
<tr>
<td>Fine arts (6 hours from two of the following options)</td>
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</tr>
<tr>
<td>ARH 100 or 101; MU 100 or 110; PHL 101, 202, or 311</td>
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</tr>
<tr>
<td>Social &amp; behavioral sciences (6 hours in one discipline) economics,</td>
<td></td>
</tr>
<tr>
<td>political science, psychology, sociology</td>
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<td>Laboratory science</td>
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</tr>
<tr>
<td>a. Physics 111/114 and 112/115</td>
<td>8</td>
</tr>
<tr>
<td>b. Coursework including at least one lab in any department in the</td>
<td></td>
</tr>
<tr>
<td>Colleges of Science or Engineering, excluding computer science and</td>
<td></td>
</tr>
<tr>
<td>mathematics</td>
<td>7-8</td>
</tr>
<tr>
<td>Computer Science Major Core:</td>
<td></td>
</tr>
<tr>
<td>CS 208, 214, 308, 309, 314, 317, 413, 424, 490, 499</td>
<td>30</td>
</tr>
<tr>
<td>Computer Science Seminar-CS 105</td>
<td>1</td>
</tr>
<tr>
<td>Computer Science Electives</td>
<td></td>
</tr>
<tr>
<td>(Designed to add in-depth knowledge to the core courses and must be</td>
<td></td>
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<tr>
<td>pre-approved by the computer science advisor.)</td>
<td></td>
</tr>
<tr>
<td>3 electives (two at 300-level or above, one at 400-level or above)</td>
<td>9</td>
</tr>
<tr>
<td>Mathematics Minor</td>
<td></td>
</tr>
<tr>
<td>MA 154, 233, 244, 251, 385, 415, 440 or 352</td>
<td>21</td>
</tr>
<tr>
<td>Electives (to bring total number of hours to 131)</td>
<td>12-13</td>
</tr>
</tbody>
</table>

### Computer Science Minor

Students majoring in other fields may obtain a minor in computer science. A minimum of 22 hours of computer science coursework is required. The request for a minor should be initiated in the student’s major department. A CS minor should include the following:
- CS 105, 108, 208, 214, 308, 317, and two CS electives, one at the 300-level or above, one at the 400-level or above.

Any deviation from this pattern should be pre-approved by the Computer Science Department.

### Computer Science (CS)

#### 100 Introduction to Computers and Programming  
3 hrs.

105 Computer Science Seminar - Ethics and Professionalism 1 hr.
Covers issues associated with the ethical use of computers in the current 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.

108 Computer Science I with Pascal 3 hrs.
Overview of hardware and software components of computer systems. Techniques of problem analysis and algorithm development. Principles of program design, coding, and testing. Introduction to the Pascal programming language, with extensive experience in programming solutions to both numerical and non-numerical problems. Lab Fee: Level 4. Prerequisite: MA 121 or MA 143 (or Level III math placement).

113 Problem Solving using FORTRAN 3 hrs.
Introduction to the FORTRAN programming language. Components of algorithms such as assignment, looping, conditional branching, and input/output. Problem analysis and algorithm development. Basic algorithms for sorting, searching, table look-up. Definition and use of functions and subroutines. Lab Fee: Level 4. Prerequisite: MA 121 (or Level III placement).

208 Computer Science II - Data Structures with Pascal 3 hrs.
Continuation of CS 108, with emphasis on advanced features of the Pascal programming language, including recursion, pointers, and files. Introduction to elementary data structures such as linked lists, stacks, queues, and simple binary trees. Basic search and sort algorithms. Additional instruction in the principles of good programming. Practical experience in the design and implementation of larger programs illustrating these topics. Lab Fee: Level 4. Prerequisites: CS 108 and MA 151 or MA 153.

214 Introduction to Discrete Structures 3 hrs.
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. Lab Fee: Level 4. Prerequisites: CS 108 and MA 154.

308 Computer Organization and Assembly Language Programming 3 hrs.

309 Switching Theory 3 hrs.
Boolean algebra, Boolean function minimization techniques, design and analysis of combinational circuits, design and analysis of sequential circuits, asynchronous circuits, timing and loading problems, designing with integrated circuits. Lab Fee: Level 5. Prerequisite: CS 214.

311 Advanced Software Development using COBOL 3 hrs.

312 System Software Development Using C 3 hrs.
The role of major system software components and the interfacing and integration of these components in the process of program development and execution. The C language and the UNIX system will be used to develop the class of software. Lab Fee: Level 4. Prerequisite: CS 208.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Description</th>
<th>Lab Fee</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>313</td>
<td>Advanced Software Development Using FORTRAN</td>
<td>3</td>
<td>Introduction to the FORTRAN language. Programming in FORTRAN, programming support environments, basic principles of design and implementation using FORTRAN. Use of FORTRAN in a CRAY XMP environment. Optimizing and vectorizing compilers. Lab Fee: Level 4. Prerequisite: CS 208.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>317</td>
<td>Introduction to Design and Analysis of Algorithms</td>
<td>3</td>
<td>Introduction to complexity analysis of algorithms with emphasis on efficient methods for searching, sorting, finding spanning trees and shortest paths in graphs. Basic algorithm design techniques such as divide &amp; conquer, dynamic programming, and backtracking. Introduction to the classification of problems; i.e. NP, intractable, and unsolvable. Lab Fee: Level 4 Prerequisites: MA 244, CS 208 and 214.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>Symbolic Programming with LISP and PROLOG</td>
<td>3</td>
<td>Use of the LISP language. Computing with symbolic expressions; e.g., algebraic expressions, logical expressions, patterns, graphs, and computer programs themselves. Building and controlling abstractions. Object oriented programming, prototyping. Introduction to PROLOG. Lab Fee: Level 4. Prerequisite: CS 208.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>Software Design and Development Using Ada</td>
<td>3</td>
<td>Introduction to the syntax and semantics of Ada, comparison to the Pascal language, data encapsulation, data abstraction, recursive data structures, parallel tasks, Ada program design languages. Introduction to Ada program support environments and concepts of correct software system design and development using Ada. Lab Fee: Level 4. Prerequisite: CS 217.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>UNIX Programming</td>
<td>3</td>
<td>Strategies for the design and development of systems and programs in the UNIX environment. UNIX operating system fundamental concepts including file and terminal I/O, processes, interprocess communication and signals. Pattern searching, filter and pipes. Shell programming, including control flow and interrupt handling. Program and system development tools awk, C, make, sed, yacc, and others. Lab Fee: Level 4. Prerequisite: CS 208.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>Introduction to Formal Languages and Automata Theory</td>
<td>3</td>
<td>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. Lab Fee: Level 4. Prerequisite: CS 317.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>413</td>
<td>Introduction to Digital Computer Design</td>
<td>3</td>
<td>Logic design of functional digital units, design of computer subsystems: register transfer, bus structure, timing and control. Design of processor memory, arithmetic, and I/O units. Lab Fee: Level 5. Prerequisites: CS 308, 309.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>424</td>
<td>Introduction to Programming Languages</td>
<td>3</td>
<td>Data and control structures and run-time considerations for modern programming languages such as Pascal, Ada, and LISP. Their applications in areas illustrating typical usage and characteristics. Lab Fee: Level 4. Prerequisite: CS 317.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
490 Systems Software 3 hrs.
Principles of systems programming. Language translators, assemblers, interpreters, and compilers. Operating systems concepts: file and I/O, scheduling, memory management, and process management. Lab Fee: Level 4. Prerequisites: CS 413 (or 308) and 424.

495 Selected Topics in Undergraduate Computer Science 3 hrs.
Covers selected areas of computer science. Prerequisites: To be arranged with the instructor. Lab Fee: Level 4.

499 Senior Project: Team Software Development 3 hrs.
A combination of lectures on proven software development 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 on their work. Lab Fee: Level 4. Prerequisite: CS 317.

500 Introduction to Artificial Intelligence 3 hrs.
Basic introduction to AI concepts and methods for problem solving, heuristic search, planning, hypothesis formation, modeling and knowledge representation, knowledge acquisition (learning), and AI's programming methodologies and tools. Applications of AI in areas of automatic programming, theorem proving, game playing, machine vision, natural language systems and robots. Lab Fee: Level 4. Prerequisites: CS 317, CS 424.

530 Introduction to Neural Networks 3 hrs.
Introduction to neural networks, covering the most prominent neural network models. Hands-on experience with neural networks through an individual or group project. Lab Fee: Level 4. Prerequisite: CS 530.

545 Introduction to Computer Graphics 3 hrs.
Introduction to the underlying theory and mechanics of computer graphics. Brief historical perspective, progressing through extended discussion on topics such as display hardware technology, 2D raster operations, 2D and 3D geometric transformations, and 3D projection and viewing techniques. A significant number of programming projects are assigned. Lab Fee: Level 4. Prerequisites: CS 312 (or proficiency with the C programming language), MA 244.

550 Ada Program Support Environments 3 hrs.
A study of advanced development concepts and support tools centered around Ada as the implementation language. Design and implementation concepts as part of the software life cycle. Lab Fee: Level 4. Prerequisite: CS 350 or equivalent introductory course in Ada.

551 Object Oriented Software Development 3 hrs.
Object oriented methods and design concepts, languages and systems for object oriented development, object oriented programming environments, application of object oriented techniques. Lab Fee: Level 4. Prerequisite: CS 208.

555 Theory of Program Development 3 hrs.
Propositional and predicate calculi, reasoning about programs, weakest precondition, program development, developing invariants, efficiency consideration, and program documentation. Lab Fee: Level 4. Prerequisite: CS 424.

586 Microprocessor Architecture 3 hrs.
Evolution of microprocessors. Software aspects: registers and register organization, instruction sets, addressing modes, assembler and assembler directives. Hardware aspects: redundant bus concepts, clock circuits, memory, parallel and serial input/output interfaces, programmed I/O, interrupt mode I/O, direct memory access. Survey of current microprocessor technology. Lab Fee: Level 5. Prerequisites: CS 513, or CS 309 or CS 415.
Programming Environments with UNIX  
590  
Advanced strategies for the design and development of systems and programs in the UNIX environment. Emphasis on automated tool and system development using UNIX tools. Parallel and supercomputer issues as treated by UNIX and C. Advanced shell concepts and programming including control flow and interrupt handling. Process and interprocess communications. Lab Fee: Level 4. Prerequisite: CS 390 or two years experience in UNIX.

Selected Topics in Computer Science  
595  
Special topics requested by students. Prerequisites: Approval and consent of instructor.

Environmental Science

Research Professor Essenwanger; Associate Professors Kidder (Coordinator), McNider, Modlin.

Environmental science courses are taken for several purposes: as a minor, to earn an environmental science certificate, as part of a composite major, and as electives. The certificate program is designed to prepare scientists, mathematicians, and engineers to solve problems relating to man’s interaction with the natural environment. The certificate is a supplement to the bachelor’s degree and signifies that the holder has broadened his perception of the physical and organic environment by studying the entire spectrum of natural science (atmosphere, biosphere, hydrosphere, and lithosphere), and by specializing in environmental aspects of his field.

Many courses necessary to earn the certificate are automatically taken as part of the student’s major or GER. Other required courses can be taken as electives, permitting the fully prepared bachelor’s candidate to complete requirements for a degree and the certificate with the usual number of credit hours required for the bachelor’s degree alone.

Composite Major in Environmental and Biological Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics-Ma 153</td>
<td>3</td>
</tr>
<tr>
<td>Physics – Ph 101, 102 or 111/114, 112/115</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry – CH 121, 123, 125, 126, 223, 331, 332, 335, 361, 362</td>
<td>22</td>
</tr>
<tr>
<td>Environmental Science – ES 101, 102, 303 or 504, 312, 321</td>
<td>18</td>
</tr>
<tr>
<td>Biological Sciences – BYS 112, 113, 114, 221, 312, and MS 507, BYS 531 or BYS 561</td>
<td>27</td>
</tr>
<tr>
<td>BYS electives</td>
<td>12-14</td>
</tr>
<tr>
<td>One from 315, 317, 378</td>
<td>4-5</td>
</tr>
<tr>
<td>One from 562, 563, 564</td>
<td>4</td>
</tr>
<tr>
<td>One from 364, 371, 372</td>
<td>4-5</td>
</tr>
<tr>
<td>Computer Science – CS 108</td>
<td>3</td>
</tr>
<tr>
<td>Electives (to include statistics)</td>
<td>3</td>
</tr>
</tbody>
</table>

Requirements for the Environmental Science Certificate

Basic science courses (unless exempted by advanced placement and/or testing in each case): BYS 113, 114; CH 121, 123, 125, 126; ES 101, 102; PH 111, 112; two basic courses in statistics and/or computer science.
Environmental certificate core courses:
BYS 312    Principles of Ecology
ES 321    Pollution Problems
ES 521    Environmental Data Analysis (or other approved course)

Advanced level specialization (9 hours required in courses in student’s major or area of interest chosen from the following):
BYS 526    Microbial Ecology
BYS 561    Physiological Ecology
BYS 562    Community Ecology
BYS 563    Population Ecology
BYS 564    Limnology
MS 502    Marine Geology
MS 509    Marine Ecology
MS 510    Marsh Ecology
CH 526    Environmental Chemistry
ISE 427    Management Systems Analysis
ISE 524    Introduction to Ergonomics: Work Development
CE 476    Water Quality Control Processes
CE 549    Introduction to Environmental Engineering
CE 550    Environmental Control
CE 559    Selected Topics in Civil Engineering
ES 303    Climatology
ES 305    Hydrology
ES 504    Survey of Atmospheric Science
ES 593    Directed Studies in Environmental Science

Requirements for a Minor in Environmental Science
A student in any area of study may build a minor in environmental science with approval of the advisor in the major department. A minor is tailored to the student’s needs through consultation with the department advisor and the Environmental Science Coordinator.

Environmental Science (ES)

100    Introduction to Space Science 1 hr.
Introduction to a variety of space science subjects. Included are lectures on space physiology, computer systems, materials science, robotics in space, thermodynamics, astrophysics, and solar physics. Laboratory experiments and simulated missions. Offered in cooperation with the Alabama Space and Rocket Center and is open only to students enrolled in Space Academy II.

101    Planetary and Atmospheric Science I 4 hrs.
Spatial relationships of earth, moon and sun that determine earth motions, seasons, atmospheric and oceanic circulation, weather and climates. Practical and field work. Lab Fee: Level 4. Prerequisite: MA 105.

102    Planetary and Atmospheric Science II 4 hrs.
Introduction to physical geology. Minerals and rocks, geologic time, mountain building, seismic and earth’s interior, continental drift and plate tectonics, weathering and erosion. Lab Fee: Level 4. Prerequisite: ES 101 or approval of instructor.

202    Physical Geology 3 hrs.
Igneous processes, minerals, rocks, rock alterations and sediments, tectonic processes and continental evolution; soil classification, climate; fluvial, desert and
glaciation landforms; river flooding, coastal hazards, geologic aspects of waste disposal and environmental hazards. Prerequisites: ES 102, CH 101.

303 Classification and Physical Causes of Climates 3 hrs.
Basic atmospheric structure and physical processes, climate history and climate change, microclimates, topoclimates. Prerequisites: ES 101, MA 105 or approval of instructor.

305 Hydrology 3 hrs.
Movement and behavior of surface and groundwater, interaction with geological structures, hydrologic prediction, contamination and purification of groundwater. Prerequisite: ES 102 or 202.

312 Principles of Ecology 4 hrs.
Ecological principles controlling plant and animal populations. Development of ecosystems, communities and habitats. One 4 hour lab a week. Field trips required. Lab Fee: Level 4. Prerequisites: BYS 112, 113, 114, CH 121. (Same as BYS 312)

321 Pollution Problems 3 hrs.
Quantitative descriptions of environmental conditions, regulations, and abatement technology. Specific pollution problems with air, water, noise, and radiation; assessment of environmental impacts of development or construction projects. Prerequisites: sophomore standing and approval of instructor.

490 Selected Topics in Environmental Science 1-3 hrs.
Special offerings to students in areas of interest not covered in present curriculum. Prerequisite: Approval of instructor. Lab Fee: Level 4.

Mathematical Sciences Department

Professors Chang, Gibson (Chair), Slater; Associate Professors Ames, Cook, Friedman, Howell, McNider, Morales, Roach, Siegrist; Assistant Professors Cobb, Elshamy, Epperson, Janik, Li, Phanord, Williamson; Lecturers Presson, Ranasinghe, Reeder.

The mathematical sciences faculty offers courses in mathematics and statistics for a Bachelor of Arts or Bachelor of Science degree in mathematics, a Bachelor of Arts or Bachelor of Science degree in mathematics education, and a minor or second major in mathematics for students majoring in other areas of study. Courses also satisfy individual needs to supplement other areas of study and to satisfy general education requirements (GER).

General Education Requirements

Students who are not planning to continue in mathematics but who need 3 to 9 hours to satisfy GER should make their choice from the sequence MA 105, 143, 151, 244, ST 281, MA 333, and 385 beginning with the course indicated by their placement level.

Students who plan to continue in mathematics and need 3 to 9 hours to satisfy GER should make their choice from the sequence MA 119, 121, 153, 154, 233, 244, beginning with the course indicated by their placement level.

Placement

No student may enroll in his first MA course at UAH before determination of his placement level. Students are placed at the appropriate level according to their high school mathematics background, their ACT scores in mathematics, their previous college credit (if any), and a placement test.

Students with various placement levels must begin their MA courses for credit as follows: Level I – MA 105 or 119; Level II – MA 121 or 143; Level III – MA 151 or 153. No credit can be obtained for an MA course below a student’s placement level, and no more than 3 hours credit is awarded at each level.
tions, conic sections, exponential and logarithmic functions. No credit given to stu-
dents who have received credit for another MA course or who place at Level II or
above. Prerequisite: Level I placement or removal of mathematics deficiencies.

119 Precalculus I 3 hrs.
Should be taken only by students who are going on to the calculus sequence (MA
153, 154,...). 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. No credit given to students who have received credit for
another MA course or who place at Level II or above. Prerequisite: Level I placement
or removal of mathematics deficiencies.

121 Precalculus II 3 hrs.
Should be taken only by students who are going on to the calculus sequence (MA
153, 154,...). 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, vec-
tors, trigonometric form of complex numbers, DeMoivre’s theorem, summation nota-
tion, arithmetic and geometric sequences and series. No credit given to students who
have successfully completed an MA course numbered above 121 or who place at
Level III. Prerequisite: Level II placement or MA 119 with a grade of C or better.

143 Finite Mathematics 3 hrs.
Linear models, matrix theory, linear programming, graphical and simplex methods of
solving systems, sets, counting, probability, decision theory and algebra review. No
credit given to students who have successfully completed MA 121 or a higher level
MA course or who place at Level II. Prerequisite: Level II placement or MA 105.

151 Survey of Elementary Calculus 3 hrs.
Limits, continuity, derivatives, chain rule, derivative tests, logarithm and exponential
functions, applications of the derivative, antiderivatives, fundamental theorem of cal-
culus, applications of the integral. No credit given to students who have received
credit for any other calculus course. Designed for students who do not plan further
study in calculus. Students planning to continue in calculus should begin with MA
153 instead of this course. Prerequisite: Level III placement or MA 143.

153 Calculus I 3 hrs.
Limits, continuity, derivatives, differentials, chain rule, implicit differentiation, appli-
cations of the derivative, conic sections. Designed for students who plan further study
in calculus. Prerequisite: Level III placement or MA 121 with a grade of C or better.

154 Calculus II 3 hrs.
Definite and indefinite integrals, exponential and logarithmic functions, trigonometric
functions, hyperbolic functions, l’Hospital’s Rule, techniques of integration,
improper integrals, applications of the integral. Prerequisite: MA 153 with a grade of
C or better.

233 Calculus III 3 hrs.
Polar coordinates, sequences and series, vectors and analytic geometry in three dimen-
sions, vector-valued functions. Prerequisite: MA 154 with a grade of C or better.

244 Introduction to Linear Algebra 3 hrs.
No credit given to students who have successfully completed either MA 442 or MA
452. Such students must substitute MA 544. 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. Prerequisite: MA 233 or MA 143, 151.
251 Calculus IV 3 hrs.
Partial differentiation, chain rule, directional derivatives, tangent plane, Lagrange multipliers, multiple integration, vector fields, line integrals, Green’s Theorem, divergence and curl, surface integrals. Prerequisite: MA 233.

324 Introduction to Differential Equations 3 hrs.
(Formerly MA 352) Elementary introduction to differential equations: first-order differential equations, Euler’s numerical method, basic theory of higher-order linear differential equations, equations with constant coefficients, Cauchy-Euler equations, variation of parameters, the Laplace transform, introduction to linear systems of differential equations. Prerequisite: MA 251, 244 (corequisite)

333 Introduction to Geometry 3 hrs.
Axiomatic development of geometry. Introduction to non-Euclidean geometries with emphasis in elliptic and hyperbolic geometries. Selected topics in Euclidean geometry. Prerequisite: MA 244 or approval of instructor.

361 Mathematical Techniques in Computer Graphics 3 hrs.
Some of the mathematics used in computer graphics. Rotations, translations, viewing transformations including orthographic and perspective projections, homogeneous coordinates, hidden line and surface removal. Students participate in computer demonstrations and projects illustrating the techniques discussed in class. Prerequisites: MA 244, 251, CS 108. Lab Fee: Level 4.

385 Introduction to Probability 3 hrs.
No credit given to students who have successfully completed MA 585. Finite probability spaces, conditional probability, random variables, expectations, variances, covariances, introduction to binomial, Poisson, uniform, exponential, and normal distributions. Prerequisites: MA 151 or 154, and one MA course at the 200-level or above.

415 Introduction to Numerical Methods 3 hrs.
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. Prerequisites: MA 244, MA 251, CS 108 or equivalent, and one MA course at the 300 level or above. Lab fee: Level 4.

442 Algebraic Structures with Applications 3 hrs.
(Formerly MA 440) Logic and mathematical proofs, mappings, binary operations, equivalence relations, groups and subgroups, Lagrange’s theorem, homomorphisms and isomorphisms, normal subgroups and quotient groups, rings, integral domains, fields, error correcting codes, linear codes, decoding, partially ordered sets, lattices, Boolean algebras, and applications. Prerequisites: MA 244 and at least one MA course at 300-level or above.

452 Introduction to Real Analysis 3 hrs.
Sequences, limits, continuity, differentiation of functions of one real variable, Riemann integration, uniform convergence, sequences and series of functions, power series, and Taylor series. Prerequisite: MA 324 or 442 or approval of instructor.

460 Introduction to Fourier Analysis 3 hrs.
Brief development of trigonometric and exponential Fourier series, derivation of the classical Fourier transform from Fourier 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. Prerequisites: MA 244, 324.
465 Introduction to Mathematical Modeling 3 hrs.
(Formerly MA 425) 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 students study general modeling principles and case studies (some open-ended) drawn from various sources. Prerequisites: MA 244, 324.

490 Selected Topics in Undergraduate Mathematics 1-3 hrs.
Requested undergraduate topics. Prerequisite: Approval of instructor.

499 Mathematics Project 1 hr.
Individualized special projects in mathematics and its applications for superior undergraduate students. No credit allowed toward a major or minor in mathematics. S/U grading. Prerequisite: approval of department chair.

502 Introduction to Real Analysis 3 hrs.
(See MA 452)

503 Introduction to Complex Analysis 3 hrs.
(Formerly MA 521) 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. Prerequisite: MA 452 or approval of instructor.

504 Intermediate Differential Equations 3 hrs.
(Formerly MA 525) Elementary introduction to more advanced topics in differential equations: linear systems of differential equations, nonlinear autonomous systems, critical points, Liapunov’s method, limit cycles, Poincare-Bendixson theorem and strange attractors, power series solutions, Frobenius series solutions. Prerequisites: MA 244, 324.

506 Methods of Partial Differential Equations 3 hrs.
Survey of theory and methods for solving elementary partial differential equations. No credit given to students who have successfully completed MA 526. 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. Prerequisites: MA 324, 244.

515 Introduction to Numerical Analysis 3 hrs.
Analysis and derivation of numerical methods for: the approximate solution of nonlinear equations; interpolation and integration of functions; approximating solutions of ordinary differential equations. Prerequisites: MA 244, 251, 324, CS 108, plus one 500-level (or higher) MA course. Lab Fee: Level 4.

526 Partial Differential Equations I 3 hrs.
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. Prerequisites: MA 502, one other 500-level MA course. (MA 506 is NOT a prerequisite.)

538 Metric Spaces with Applications 3 hrs.
(Formerly MA 570) 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. Prerequisites: MA 502 and at least one other MA course at the 500-level or above.
540 **Combinatorial Enumeration** 3 hrs.
Counting, pigeonhole principle, permutations and combinations, generating functions, principle of inclusion and exclusion, Polya's theory of counting. Prerequisite: MA 442 or approval of instructor.

542 **Algebra** 3 hrs.
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. Prerequisite: MA 442 or approval of instructor.

544 **Linear Algebra** 3 hrs.
Vector spaces, bases, linear transformations, matrices, determinants, eigenvalues, similarity, Jordan canonical forms, dual spaces, bilinear forms, quadratic forms, orthogonal and unitary transformations. Prerequisites: MA 244 and at least one MA course at 300-level or above.

551 **Functions of Several Variables** 3 hrs.
Topology of $\mathbb{R}^n$, limits, continuity, and differentiation of functions of several real variables, Jacobians, implicit function and inverse function theorems, Riemann integration of functions of several real variables, and change of variables theorem for multiple integrals. Prerequisite: MA 502.

560 **Intermediate Fourier Analysis** 3 hrs.
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). Prerequisites: MA 244, 324, acquaintance with classical Fourier analysis (such as covered in MA 460).

565 **Intermediate Mathematical Modeling** 3 hrs.
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. Prerequisites: MA 244, 324, 385, one MA course at 400-level or above, and knowledge of at least one scientific programming language.

585 **Probability** 3 hrs.
Probability theory and its applications. Independent trials, discrete and continuous random variables, law of large numbers, basic distributions, sums of independent random variables, sequences of random variables, central limit theorem, and convergence in distribution. Prerequisites: MA 251 and one of MA 385, ISE 390, ST 281, or approval of instructor.

590 **Selected Topics in Mathematics** 3 hrs.
Requested selected topics.

**Statistics (ST)**

281 **Elements of Statistical Analysis I** 3 hrs.
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. Prerequisite: MA 154 or 151. Student cannot receive credit for more than one of ST 281, MSC 287, or AHS 300. Lab Fee: Level 4.
Optical Science Program

Professors Duthie, Emslie (Chair), Sung; Research Professor Barr; Associate Professors Chipman, A. Rosenberger; Assistant Professor Hillman.

Optical Science Major

Optics is a multidisciplinary field that requires knowledge in both the physical sciences and engineering. The B.S. degree in optical science consists of a major in optics with background courses in physics, computer science, and engineering. The program produces professionals who are able to move immediately into government or private industry and work in many of the areas of optics such as optical system analysis and design, image processing, optical sensors, laser development and holography. Optical science graduates are also well prepared for graduate work in optics, physics or related fields.

Optical science majors receive a strong exposure to geometrical and physical optics, then select from a range of contemporary electives such as electro-optics, lasers, polarimetry, and radiometry. An advanced series of laboratories taken in the senior year provides exposure to contemporary equipment and modern optical techniques.

The following table shows the curriculum requirements and a typical program of study.

Curriculum for B.S. Degree in Optical Science

1. General Education Requirements (Consult the catalog section dealing with GER for B.S. degree for details.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 101-102</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>Literature (See options in GER section of catalog.)</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>HY 101-102</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>Social Science (One discipline)</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>Fine Arts</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>6-12 hrs.</td>
</tr>
<tr>
<td>or Communication Skills (CS 108 or 113; CM 113; EH 301)</td>
<td>9 hrs.</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>36-42 hrs.</strong></td>
</tr>
</tbody>
</table>

2. Areas of Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 111 General Physics w/Calculus I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>PH 112 General Physics w/Calculus II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>PH 113 General Physics w/Calculus II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>PH 114 General Physics Lab I</td>
<td>1 hr.</td>
</tr>
<tr>
<td>PH 115 General Physics Lab II</td>
<td>1 hr.</td>
</tr>
<tr>
<td>PH 116 General Physics Lab III</td>
<td>1 hr.</td>
</tr>
<tr>
<td>PH 205 Mathematical Methods for Physics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>OPT 341 Geometrical Optics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>OPT 342 Physical Optics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>OPT 411 Geometrical Optics Lab</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>OPT 412 Physical Optics Lab</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>PH 431 Intermed. Electricity &amp; Magnetism</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>PH 432 Intermed. Electricity &amp; Magnetism</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

TOTAL 240
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPT 441 Optical Systems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>OPT 442 Interference &amp; Diffraction</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>OPT 445 Introduction to Lasers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>PH 451 Quantum Physics I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>OPE 456 Photonics Lab</td>
<td>2 hrs.</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>45 hrs.</strong></td>
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3. Math Minor

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MA 153 Calculus I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 154 Calculus II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 233 Calculus III</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 244 Introduction to Linear Algebra</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 251 Calculus IV</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 352 Introduction to Differential Equations</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 460 Introduction to Fourier Analysis</td>
<td>3 hrs.</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>21 hrs.</strong></td>
</tr>
</tbody>
</table>

4. Required Technical Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 108 Introduction to Computer Science I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CS 208 Introduction to Computer Science II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 300 Electrical Circuits I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 301 Electronic Instrumentation Lab</td>
<td>1 hr.</td>
</tr>
<tr>
<td>EE 311 Electronic Instrumentation</td>
<td>3 hrs.</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>13 hrs.</strong></td>
</tr>
</tbody>
</table>

5. Technical Electives

Technical elective courses in chemistry, physics (e.g. PH 301, 305), mathematics, computer science or engineering. Must include two optics courses at 400-level or above. (See table below). 

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>(PH 301)</td>
<td>3 hrs.</td>
</tr>
<tr>
<td><strong>TOTAL REQUIRED:</strong></td>
<td><strong>128-134 hours</strong></td>
</tr>
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</table>

**Typical Schedule for Full-Time Students**

(Does not include General Education (GER) courses)

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MA 153 (3)</td>
<td>MA 154 (3)</td>
<td>MA 233 (3)</td>
</tr>
<tr>
<td></td>
<td>MA 154 (3)</td>
<td>PH 111 (3)</td>
<td>PH 112 (3)</td>
</tr>
<tr>
<td></td>
<td>PH 114 (1)</td>
<td>PH 115 (1)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PH 113 (3)</td>
<td>MA 244 (3)</td>
<td>MA 352 (3)</td>
</tr>
<tr>
<td></td>
<td>PH 116 (1)</td>
<td>OPT 342 (3)</td>
<td>PH 205 (3)</td>
</tr>
<tr>
<td></td>
<td>OPT 341 (3)</td>
<td>Tech. Course*</td>
<td>Tech. Course*</td>
</tr>
<tr>
<td></td>
<td>MA 251 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>OPT 441 (3)</td>
<td>OPT 442 (3)</td>
<td>OPT 446# (3)</td>
</tr>
<tr>
<td></td>
<td>MA 460 (3)</td>
<td>PH 431 (3)</td>
<td>PH 432 (3)</td>
</tr>
<tr>
<td></td>
<td>(PH 301) (3)</td>
<td>Tech. Course*</td>
<td>(PH 305) (3)</td>
</tr>
<tr>
<td>4</td>
<td>OPT 444# (3)</td>
<td>OPT 447# (3)</td>
<td>OPT 445 (3)</td>
</tr>
<tr>
<td></td>
<td>OPT 411 (2)</td>
<td>OPT 412 (2)</td>
<td>OPE 456 (2)</td>
</tr>
<tr>
<td></td>
<td>PH 451 (3)</td>
<td>OPE 453# (3)</td>
<td>Tech. Course*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPE 454# (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tech. Course*</td>
</tr>
</tbody>
</table>

241
The following technical courses are required: CS 108, 208, EE 300, 301, 311.
#At least two of these courses are required.

Courses in parentheses are suggested electives, especially for those considering entry into graduate school.

Minor

A minimum of 21 semester hours of course work is required for a minor in optical science. A request for the minor should be initiated by the department in which the student is majoring. The courses should include: OPT 341, 342, 411, 412, 441, 442, OPE 456, plus one of the following: OPT 444, 445, 446, or 447.

Optical Science (OPT)

341 Geometrical Optics 3 hrs.
Introduction to the concepts and principles of geometrical optics. Rays and wave fronts, Fermat's principle, Snell's law, dispersion, systems of plane mirrors and prisms, paraxial rays, paraxial design, thin lenses and thick lenses, introduction to aberrations and ray tracing. Prerequisite or parallel: PH 113. (Same as PH 341.) Fall.

342 Physical Optics 3 hrs.
Electromagnetic waves, simple harmonic motion, superposition of waves, interference of light, Young's double slit experiment, diffraction gratings, diffraction, speed of light, light sources and their spectra, absorption and scattering, dispersion, polarization. Prerequisites: OPT 341, PH 205. (Same as PH 342.) Winter.

411 Geometrical Optics Laboratory 2 hrs.
Introduction to optical laboratory techniques, focus and alignment with incoherent and coherent sources, the nodal slide, thin lenses, thick lenses, and lens systems, the effects of apertures and stops, reflection, refraction and dispersion, aberrations, elements of radiometry. Prerequisite: PH 116, OPT 341. Prerequisite or parallel: OPT 441. Lab Fee: Level 5. (Same as PH 411.) Fall.

412 Physical Optics Laboratory 2 hrs.
Introduction to physical optics phenomena. Young's double slit experiment, Lloyd's mirror, Fresnel biperism, Newton's rings, intensity distribution in fringe systems, Michelson interferometer, Fabry-Perot interferometer, Fresnel and Fraunhofer diffraction, diffraction by circular, rectangular and multiple openings, diffraction gratings. Prerequisite: PH 116, OPT 342, OPT 442 (may be taken in parallel) or EE 382. Lab Fee: Level 5. (Same as PH 412 and OPE 455.) Winter.

441 Optical Systems Design 3 hrs.
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. Prerequisite: OPT 342. (Same as PH 441, OPE 441, and EE 461.) Fall.

442 Interference and Diffraction 3 hrs.

444 Optoelectronics 3 hrs.
Review of polarized light and 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. Prerequisite: OPT 342. (Same as PH 544 and OPE 451.) Fall.

445 Introduction to Lasers 3 hrs.
Introduction to the 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, holography. Prerequisites: PH 451, PH 432. (Same as PH 545.) Spring.

446 Radiometry 3 hrs.
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. Fluctuations and statistics of electromagnetic fields. Prerequisite: OPT 342. (Same as PH 546.) Spring.

447 Polarized Light 3 hrs.

Physics Department

Professors Chan, Duthie, Emslie (Chair), F. Franz, J. Franz, Horwitz, F. Rosenberger, Smalley, Sung; Research Professors Barr, Comfort, Takahashi, Torr; Associate Professors Chipman, A. Rosenberger; Associate Research Professors Alexander, Machado, Paciesas; Assistant Professors Haines, Hillman.

The undergraduate program in physics is designed to provide the foundation necessary for either continued study in graduate school or for a terminal degree leading to professional employment. The curriculum contains additional options for those wishing to place increased emphasis upon optics, material science, engineering physics or secondary school teaching.

Physics Major

The basic courses for a B.S. degree with a major in physics include PH 111, 112, 113, 114, 115, 116, 205, 301, 302, 305, 310, 311, 312, 337, 416, 421, 431, 432, 451, 452. Five approved curricula are listed. Other programs may be approved after consultation with the student’s faculty advisor.

Physics Minor


Curriculum I

For working professionally at the B.S. level or preparation for graduate school.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
<td>36-42</td>
</tr>
<tr>
<td>EH 101, 102, 6 hours of literature</td>
<td>12 hrs.</td>
</tr>
<tr>
<td>(See options in GER section of catalog.)</td>
<td></td>
</tr>
<tr>
<td>HY 101, 102</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>Social science (one discipline)</td>
<td>6 hrs.</td>
</tr>
<tr>
<td>Fine arts</td>
<td>6 hrs.</td>
</tr>
</tbody>
</table>
Modern foreign language.......................................................... 6-12 hrs.
or Communication skills (CS 108 or 113; CM 113, EH 301)............. 9 hrs.

Physics – PH 111, 112, 113, 114, 115, 116, 205, 301, 302, 305, 310, 311,
312, 337, 421, 431, 432, one senior lab at 400-level, 451, 452.............. 47

Mathematics – MA 153, 154, 233, 244, 251, 324, one additional
MA course at 400-level or above .................................................. 21

Chemistry – CH 121, 123, 125, 126............................................. 8

Computer science – CS 113....................................................... 3

Electives.................................................................................... 7-13

Curriculum II
For working professionally in optics at the B.S. level. Semester Hours

GER (humanities and social sciences)............................................. 36-42

Physics – PH 111, 112, 113, 114, 115, 116, 205, 301, 305, 310, 311, 341,
342, 431, 432, 451.................................................................. 38

Optical Science-OPT 412, 442, 445, one of 444, 446, 447................ 11

Mathematics – MA 153, 154, 233, 244, 251, 324, 460, 503............. 24

Chemistry – CH 121, 123, 125, 126............................................. 8

Computer Science-CS 113....................................................... 3

Electives.................................................................................... 2-8

NOTE: For entry into a graduate program in physics, students should include PH 302, 421
in their program of study.

Curriculum III
Natural science program of study with emphasis on physics. This curriculum will satisfy Semester Hours
requirements for the premedical program.

GER (humanities and social sciences)............................................. 36-42

Physics – PH 106, 107, 111, 112, 113, 114, 115, 116, 205, 301, 310,
311, 312, 431, 451.................................................................. 35

Chemistry – CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336.... 21

Mathematics – MA 153, 154, 233, 244, 251, 352......................... 18

Biological Sciences – BYS 113, 114, 319.................................... 11

Electives.................................................................................... 1-7

NOTE: Students interested in the premedical aspects of this program are advised to consult
with a preprofessional adviser.

Curriculum IV
B.S. degree with a major in physics for students interested in Engineering Physics Semester Hours

GER (humanities and social sciences)............................................. 36-42

Physics – PH 111, 112, 113, 114, 115, 116, 205, 301, 302, 305, 310, 311,
312, 421, 431, 432, 451................................................................ 39

Mathematics – MA 153, 154, 233, 244, 251, 324......................... 18

Chemistry – CH 121, 123, 125, 126............................................. 8

Computer Science-CS 113....................................................... 3

Engineering cognate studies – to be decided with chair’s and advisor’s concurrence .................. 30

NOTE: This curriculum will probably require more than the minimum total of 128 semester hours.
**Curriculum V**

B.S. degree with a major in physics. This plan meets requirements for an Alabama Class B High School Teacher's Certificate.

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
</tr>
<tr>
<td>Physics – PH 111, 112, 113, 114, 115, 116, 205, 301, 302, 310, 311, 312, 421, 431, one senior lab at 400 level, 451, 452</td>
</tr>
<tr>
<td>Mathematics – MA 153, 154, 233, 244, 251, 324, one additional</td>
</tr>
<tr>
<td>MA course at 400 level or above</td>
</tr>
<tr>
<td>Chemistry – CH 121, 123, 125, 126</td>
</tr>
<tr>
<td>Biological sciences (minimum of 4 hours)</td>
</tr>
<tr>
<td>Second teaching area</td>
</tr>
<tr>
<td>Professional education courses</td>
</tr>
</tbody>
</table>

NOTES:

1. This curriculum will probably require more than the minimum total of 128 semester hours.
2. Students pursuing this curriculum should consult with the Department of Education early in their program.
3. It is possible for the general education requirements to count toward the second teaching area. Early academic advisement is recommended for students who wish to pursue this option.
4. A general sciences composite major covering the areas of chemistry, biological sciences, environmental science and physical sciences is possible under this curriculum. Interested students should consult the Education Department.

**Typical Four Year Program (128 Credits)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall Cr</th>
<th>Winter Cr</th>
<th>Spring Cr</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>MA 153</td>
<td>MA 233</td>
<td>GER</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CH 121</td>
<td>PH 111</td>
<td>GER</td>
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</tr>
<tr>
<td></td>
<td>CH 125</td>
<td>PH 114</td>
<td>GER</td>
<td>3</td>
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<td>GER+</td>
<td>GER</td>
<td>GER</td>
<td>3</td>
</tr>
<tr>
<td>Sophomore</td>
<td>MA 244</td>
<td>MA 324</td>
<td>GER</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PH 112</td>
<td>PH 205</td>
<td>GER</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PH 115</td>
<td>GER</td>
<td>GER</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CS 113</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td>PH 301</td>
<td>PH 432</td>
<td>JR</td>
<td>3</td>
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<td></td>
<td>PH 310</td>
<td>PH 312</td>
<td>JR</td>
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<td>PH 337</td>
<td>PH 305</td>
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<td>GER</td>
<td>Elective</td>
<td>JR</td>
<td>3</td>
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<tr>
<td>Senior</td>
<td>PH 451</td>
<td>PH 416</td>
<td>JR</td>
<td>3</td>
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<td></td>
<td>MA 4XX</td>
<td>PH 421</td>
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<td></td>
<td>GER</td>
<td>Elective</td>
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+General Education Requirement courses are also offered during the summer term.
Astronomy (AST)

106 General Astronomy I  
Introduction to astronomy and astrophysics with emphasis on quantitative aspects of physical phenomena occurring in the universe. The solar system, motion of the earth, seasons, sun, the moon and tides. Telescope systems and their uses, positional astronomy and navigation. Laboratory included. AST 106 and 107 satisfy GER laboratory science requirements. Prerequisite: high school algebra and trigonometry. Lab Fee: Level 4. (Same as PH 106.) Fall.

107 General Astronomy II  

Physics (PH)

Prerequisites for physics courses listed may be waived by instructor or department chair for auditors or students with equivalent experience.

101 General Physics  
Introductory course for non-science student. Phenomenological in nature with emphasis on understanding basic ideas of physics and ability to apply these ideas to specific problems. Newtonian mechanics, conservation laws, electrostatics, and currents. Laboratory included. PH 101 and 102 satisfy laboratory science requirement. Prerequisite: high school algebra. Lab Fee: Level 4. Fall.

102 General Physics  

106 General Astronomy I  
Introduction to astronomy and astrophysics with emphasis on quantitative aspects of physical phenomena occurring in the universe. The solar system, motion of the earth, seasons, the sun, the moon and tides. Telescope systems and their uses, positional astronomy and navigation. Laboratory included. PH 106 and 107 satisfy laboratory science requirements. Prerequisite: high school algebra and trigonometry. Lab Fee: Level 4. (Same as AST 106.) Fall.

107 General Astronomy II  

111 General Physics with Calculus I  
For science and engineering students. Phenomenological and quantitative in nature with emphasis on understanding basic ideas of physics and ability to apply these ideas to specific problems. Vectors, Newtonian mechanics, energy, simple harmonic motion. PH 114 should be taken concurrently for credit as a laboratory science. Prerequisite: MA 153 and MA 154 in parallel. All terms.

112 General Physics with Calculus II  
Continuation of PH 111. Heat and thermodynamics, basic electricity, electric and magnetic fields. PH 115 should be taken concurrently for credit as a laboratory science. Prerequisite: MA 154, C or better in PH 111. All terms.
General Physics with Calculus III 3 hrs.
Continuation of PH 111 and 112. Modern physics part of general physics sequence. Relativity, quantum effects, atomic and nuclear structure, and elementary particles. PH 116 should be taken concurrently for credit as a laboratory science. Prerequisites: MA 233, C or better in PH 112. Fall, Winter, Spring.

General Physics Laboratory I 1 hr.
Laboratory instruction in support of material covered in PH 111. Prerequisite: PH 111 to be taken concurrently. Lab Fee: Level 4. All terms.

General Physics Laboratory II 1 hr.
Laboratory instruction in support of material covered in PH 112. Prerequisite: PH 112 to be taken concurrently. Lab Fee: Level 4. All terms.

General Physics Laboratory III 1 hr.
Laboratory instruction in support of material covered in PH 113. Prerequisite: PH 113 to be taken concurrently. Lab Fee: Level 4. Fall, Winter, Spring.

Mathematical Methods in Physics 3 hrs.

Intermediate Mechanics I 3 hrs.
Newtonian mechanics, linear driven and non-linear oscillations, calculus of variations, Lagrangian and Hamiltonian dynamics, central force motion. Prerequisite: PH 205. Fall.

Intermediate Mechanics II 3 hrs.
Two-particle collisions, special relativity, non-inertial reference frames, rigid bodies, coupled oscillations, vibrating strings, wave equation. Prerequisite: PH 301. Winter.

Applied Physics 3 hrs.
Application of physical principles to realistic problems. Systems with many degrees of freedom, non-linear systems, matrix methods, approximate techniques. Solution of problems by numerical methods, use of computers. Prerequisites: PH 205, CS 113, MA 244. Spring.

Intermediate Laboratory I 1 hr.
Experimental study of laws of mechanics. Introduction to study of statistical methods. Lab Fee: Level 4. Fall.

Intermediate Laboratory II 1 hr.

Intermediate Laboratory III 1 hr.
Electric circuits, acoustics and fluids, optics. Prerequisite: PH 311. Lab Fee: Level 4. Spring.

Electronics 4 hrs.
Introductory course for all science students. Basic AC and DC circuits, vacuum-tube circuits, transistor circuits, power supplies, feedback and their use in laboratory instruments. Laboratory included. Prerequisite: PH 112. Lab Fee: Level 4. Fall.

Geometrical Optics 3 hrs.
Introduction to the concepts and principles of geometrical optics. Rays and wave fronts, Fermat's principle, Snell's law, dispersion, systems of plane mirrors and prisms, paraxial rays, paraxial design, thin lenses and thick lenses, introduction to aberrations and ray tracing. Prerequisite or parallel: PH 113. (Same as OPT 341.) Fall.
Physical Optics 3 hrs.
Electromagnetic waves, simple harmonic motion, superposition of waves, interference of light, Young's double slit experiment, diffraction gratings, diffraction, speed of light, light sources and their spectra, absorption and scattering, dispersion, polarization. Prerequisite: PH 341. (Same as OPT 342.) Winter.

Geometrical Optics Laboratory 2 hrs.
Introduction to optical laboratory techniques, focus and alignment with incoherent and coherent sources, the nodal slide, thin lenses, thick lenses, and lens systems, the effects of apertures and stops, reflection, refraction and dispersion, aberrations, elements of radiometry. Prerequisite: PH 116, OPT 341. Prerequisite or parallel: OPT 442. Lab Fee: Level 5. (Same as OPT 411.) Fall.

Physical Optics Laboratory 2 hrs.
Introduction to physical optics phenomena. Young's double slit experiment, Lloyd's mirror, Fresnel biprism, Newton's rings, intensity distribution in fringe systems, Michelson interferometer, Fabry-Perot interferometer, Fresnel and Fraunhofer diffraction, diffraction by circular, rectangular and multiple openings, diffraction gratings. Prerequisite: PH 116, PH 342, OPT 442 (may be taken in parallel) or EE 382. Lab Fee: Level 5. (Same as OPT 412 and OPE 455.) Winter.

Nuclear Physics Laboratory 1 hr.
Statistics in counting processes, beta-ray continuum, scintillation spectroscopy. Lab Fee: Level 4. Fall.

Solid State Physics Laboratory 1 hr.
Fundamental solid state experiments including electron paramagnetic resonance, nuclear magnetic resonance, Hall effect, cyclotron resonance, Mossbauer spectroscopy. Lab Fee: Level 4. Winter.

X-Ray Laboratory 1 hr.
Powder and single crystal X-ray photography with theory as needed. Lab Fee: Level 4. Spring.

Senior Laboratory 1 hr.
Selected experiments from PH 412 - 415. Lab Fee: Level 4. Offered upon demand.

Senior Thesis 3 hrs.
Semi-original work performed under direction of faculty member. Lab Fee: Level 5. Offered upon demand.

Thermal and Statistical Physics 3 hrs.
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, propagation. Prerequisites: PH 113 and 205. Spring.

Intermediate Electricity and Magnetism I 3 hrs.
Basic concepts of electrostatics, electric potential theory, electric fields and currents, field of moving charge including relativistic treatment, magnetic fields, Maxwell's equation. Prerequisites: PH 205, MA 251. Prerequisite or parallel: MA 352. Winter.

Intermediate Electricity and Magnetism II 3 hrs.
Continuation of PH 431. Development of Maxwell's equations for time-varying fields, basic concepts of AC circuit theory, electric fields in matter, magnetic fields in matter, modern applications. Prerequisite: PH 431. Spring.

Optical Systems Design 3 hrs.
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. Prerequisite: PH 342. (Same as OPT 441, OPE 441 and EE 461.) Fall.
Interference and Diffraction
Two beam interference, multiple beam interference, optical testing, Fraunhofer diffraction, Fresnel diffraction, the Fourier transform, Fourier methods in optics, coherence, holography. Prerequisite: PH 441. (Same as OPT 442 and OPE 442.) Winter.

Introductory Quantum Mechanics I
Waves and particles; Bohr’s model of the atom; de Broglie waves, wave-packets and the uncertainty principle; postulates of quantum mechanics; Schrödinger’s equation; simple systems in one, two and three dimensions; the hydrogen atom. Prerequisites: PH 113, PH 205, PH 301, MA 244. (Same as PM 551 and CH 553.) Fall.

Introductory Quantum Mechanics II
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. Prerequisite: PH 451. (Same as PH 552 and CH 554.) Winter.
School of Primary Medical Care

Dean J. Ellis Sparks, Professor and Chief of Internal Medicine Programs
Associate Dean for Administration Bobby G. Moore, Associate Professor of Microbiology

Emergency Medicine
Clinical Instructors Beck, West; Lecturers Andrews, McGill.

Family Medicine
Professor Crump; Professor Emeritus Grant; Associate Professor Everett (chief), Hubbard, T. Johnson, Linder, Motley; Clinical Associate Professor Moessner; Adjunct Associate Professor Fleming; Clinical Assistant Professors Daniell, Garber; Research Assistant Professor (Aerospace Medicine) Aten; Instructor Caldwell.

Internal Medicine
Professor Chandler, Sparks (chief); Associate Professor B. Johnson; Clinical Associate Professors Patton, Schreeder, Tietke, R. Williams; Assistant Professor Huddleston; Clinical Assistant Professors Boyer, Hull, Morgan.

Medical Sociology
Professor McCalister.

Microbiology
Associate Professor Moore

Obstetrics and Gynecology
Emeritus Professor Comer; Professor Di Placido (chief); Assistant Professors Green, Light; Clinical Assistant Professor Harris; Clinical Instructor J. Hogan; Clinical Associates/OB-GYN Bottegal, Burleson, Goode, Hughes, Sarge.

Pathology
Clinical Professor Litkenhous (chief); Lecturer Keebler.

Pediatrics
Professor Montgomery (chief); Clinical Professors Lester, Quirante, Stewart; Associate Professors Fleming, Knight; Assistant Professor Hornberger; Clinical Assistant Professor Powell.

Psychiatry
Professor Kramer (chief); Assistant Professor D. Hogan; Clinical Associate/Psychiatry Taylor.

Radiology
Clinical Professor T. McKenzie (chief).

Surgery
Clinical Professors P. R. Kakani, Laughlin, Selah (chief), F. Smith; Clinical Assistant Professors Carpenter, Harriman, Lancaster.
The School of Primary Medical Care of the University of Alabama in Huntsville offers courses for undergraduates interested in learning more about the health professions before entering medical school, dental school, or other health professional educational programs. The school also offers for undergraduate credit a paramedical program at the highest level of training for emergency medical technicians. Both groups of undergraduate courses are listed in this section.

The UAH School of Primary Medical Care offers professional medical training on three levels. For junior and senior medical students in the University of Alabama School of Medicine, the UAH School of Primary Medical Care offers a complete clinical education program. Through the School of Primary Medical Care, UAH jointly offers with Huntsville Hospital a three-year residency in family practice for medical school graduates who want specialized training to qualify for certification by the American Board of Family Practice. The school also sponsors or cosponsors a variety of continuing medical education conferences and workshops to aid practicing physicians in maintaining licensure and certification requirements. All three programs are accredited through the University of Alabama School of Medicine (UASOM).

All UASOM freshman students are admitted to the parent school in Birmingham, where they complete their basic medical science training, which comprises the first two years of the undergraduate medical curriculum. Students then take their clinical clerkships and electives at the Birmingham, Huntsville, or Tuscaloosa campuses. Students who satisfactorily complete the medical curriculum are awarded diplomas from the University of Alabama School of Medicine.

Address correspondence about admission to the tri-campus UASOM to: Associate Director of Student Services for Admissions, University of Alabama School of Medicine, Room P100, Volker Hall, 1600 University Boulevard, Birmingham, Alabama 35294. Students or prospective students at UAH interested in premedical or predental baccalaureate programs are referred to the preprofessional advisor in the College of Science through the Office of the Dean of the College of Science.

Faculty and students of the School of Primary Medical Care are available for consultation with students interested in medicine and other health professions. Interested students are referred to the Office of Medical Student Affairs, UAH Clinical Science Center.

Goals

In accord with the mission, goals, and objectives of the UASOM, the mission of the program at Huntsville is to develop and maintain the following objectives:

1. A complete clinical program for junior and senior medical students that also demonstrates career options in primary-care disciplines.
2. Residency training programs in traditional primary-care disciplines to provide practicing physicians to meet the needs of Alabama.
3. Continuing medical education programs to provide physicians and other health-care professionals in North Alabama opportunities to stay abreast of advances in patient care.
4. Research in psychosocial and socioeconomic areas related to medicine and health care in general, as well as traditional biomedical research.
5. Ongoing patient-care services appropriate to the training of the school’s residents and medical students and the health needs of North Alabama.

Undergraduate Programs (UAH)

Admissions committees of professional schools expect competitive applicants to be knowledgeable concerning their fields of interest. To this end, the School of Primary Medical Care faculty work with faculty of other schools and divisions of UAH to offer courses for preprofessional students.

The University’s emergency medical service-paramedic training program is also offered through the SPMC. Upon successful completion of the program, the student is qualified to apply for licensure as an emergency medical technician-paramedic through the state Department of Public Health.
100 Introduction to the Health Professions 1 hr.
Career options for undergraduate students interested in health professions. Basics of health-care delivery systems and terminology of health care. Primarily for freshman and sophomores. (Same as BYS 100).

191 Emergency Medical Technician-Basic 3 hrs.
Basic techniques of prehospital stabilization in emergencies such as traumatic injuries, cardiac arrest, and other life-threatening health conditions.

193 Emergency Medical Technician-Basic Lab 1 hr.
Laboratory concurrent with MED 191. Application of techniques taught in MED 191 to real or simulated situations. Qualification for examination for Alabama EMT-Basic license upon successful completion of lecture and laboratory. Prerequisite: MED 191 or concurrent enrollment.

291 Emergency Medical Technician-Intermediate I 3 hrs.
Knowledge, understanding and skills needed to perform proper advanced airway management, proper administration of IV fluids and other advanced emergency care procedures. Prerequisites: MED 191 and 193, current Alabama EMT-Basic license, and admission qualifications as specified by the UAH EMT-Paramedic Educational Advisory Board.

292 Emergency Medical Technician-Intermediate II 1 hr.
Continuation of MED 291, focusing on medical emergencies and trauma life support. Lab Fee: Level 8. Prerequisites: MED 291 and admission qualifications as specified by the UAH EMT-Paramedic Educational Advisory Board.

293 Emergency Medical Technician-Intermediate Laboratory 4 hrs.
Application of techniques taught in MED 291, 292 and 294 to real or simulated situations. Successful completion of all intermediate courses qualifies student to apply for the Alabama EMT-Intermediate license. Lab Fee: Level 7. Prerequisites: MED 291, 292 and 294, and admission qualifications as specified by the UAH EMT-Paramedic Educational Advisory Board.

294 Emergency Medical Technician-Intermediate Electrocardiology 3 hrs.
Offers knowledge, understanding, and skills needed to interpret cardiac dysrhythmias in Lead II ECG, to better understand cardiac cell electrophysiology, and to relate the theory of common cardiac disease to non-lethal as well as death-producing dysrhythmias. Prompt recognition and therapeutic management are emphasized. Prerequisites: Admission qualifications as set down by the EMT-Paramedic Educational Advisory Board for EMT students. Open to all health care professionals.

391 Emergency Medical Technician-Paramedic Training 6 hrs.
Training in pharmacological intervention for emergency patients as identified by the State Committee on Public Health. Instruction about medications endorsed by the American Heart Association and U.S. Department of Transportation as essential or useful for the treatment of certain prehospital medical emergencies. Training in psychological first aid. Successful completion of course enables student to give advanced cardiac life support under a physician’s direction. Prerequisite: Admission qualifications as specified by the UAH EMT-Paramedic Educational Advisory Board.

393 Emergency Medical Technician-Paramedic Laboratory 6 hrs.
Application of techniques taught in MED 391 to real or simulated situations. Successful completion of lecture and laboratory courses qualifies student to apply for the Alabama EMT-Paramedic license. Lab fee: Level 9. Prerequisites: MED 391 and admission qualifications as specified by the UAH EMT-Paramedic Educational Advisory Board.
**401 Introduction to Clinical Medicine (Preprofessional)** 3 hrs.
On-site exposure and experience in clinical settings for preprofessional student. Student works in a minimum of five clinical areas in a local hospital. Weekly lectures cover topics from human anatomy to pathophysiology of disease. Prerequisite: junior or senior status and permission of instructor.

**402 Social Epidemiology** 3 hrs.
Predisposing and contributory social and cultural variables in acquisition and resolution of disease in human subpopulations. Interpretative models and logic of social epidemiology and relevant concepts and methods of descriptive and analytic epidemiology. Prerequisite: sophomore status.

**403 Clinical Medical Sociology** 3 hrs.
Systematic analysis of problematic behaviors of patients and health professionals in the acquisition, diagnosis, treatment, and resolution of illness. General and role-specific behaviors, contexts and interaction styles as variables in problem resolution or circumvention. Prerequisite: Junior or senior status.

**Medical Programs (UASOM)**

The medical student curriculum is determined by the School of Primary Medical Care faculty with the agreement of the Curriculum Committee of UASOM. The family practice residency curriculum is determined by the SPMC faculty in family medicine with the agreement of Huntsville Hospital and approval of the joint Residency Review Committee for Family Practice and the Accreditation Council for Graduate Medical Education. The medical-student and resident curricula of the UAH School of Primary Medical Care are subject to change through the mechanisms described above without prior notice.

**Medical Student Education**

The two-year clinical program of the School of Primary Medical Care completes the qualifications of students for the M.D. degree and for taking the Part II Examination of the National Board of Medical Examiners. The special focus of the program is on general clinical competencies in medicine, pediatrics, obstetrics and gynecology, surgery, and psychiatry that qualify a student for graduate training in all disciplines. It is intended that a student completing the program will be qualified to enter an approved residency in any field of medicine.

The clinical experiences are oriented toward the primary-care emphasis on comprehensive health maintenance, behavioral medicine, continuity of care, and consideration of the family as a unit of health care. In general, both the core and elective experiences involve a combination of inpatient and outpatient assignments, the latter including clinic and private office experience. Clinical conferences appropriate to each specific core clerkship and elective are scheduled.

Required clerkships include these areas:
- Obstetrics and Gynecology
- Pediatrics
- Internal Medicine
- Psychiatry
- Family Medicine
- Surgery

**Medical Student Elective Program**

Clinical electives offered by the UAH School of Primary Medical Care are characterized by:

1. A one-to-one faculty-student relationship in most offerings.
2. Experience with both hospital and ambulatory patient care.
3. Experience in early diagnosis of illness.
4. Experience through private practice exposure in non-medical aspects of health care and practice.
During the clinical electives, student works in both hospital and office settings at the discretion of physician-supervisor, who extends graduated responsibility to student for care of private patients.

**Family Practice Residency**

The Family Practice Residency Program of UAH and Huntsville Hospital was the first approved residency in family practice in Alabama and the first residency program of any kind to be implemented in Huntsville. The purpose of the residency is to aid developing physicians
in acquiring knowledge, skills, and attitudes necessary to become proficient family physicians who can provide families with comprehensive health care on a continuing basis. In acknowledgement of the need for continued medical education to maintain professional excellence, residents are encouraged to develop habits of learning and understanding that will help them assimilate current health-care information for the duration of their careers.

The residency training program is based in the UAH Family Practice Center, which is located in the UAH Medical Clinics across the street from the main building of Huntsville Hospital. Each family practice resident is assigned patients to be followed in the UAH Medical Clinics with necessary inpatient care at Huntsville Hospital. In addition to their hospital responsibilities the first year residents see family practice patients one-half day per week in the clinic. The patient load increases during the second and third years of the program.

The residents begin their training with concentrated in-hospital medicine. The first year consists of three month rotations in inpatient medicine in pediatrics, obstetrics and gynecology, and surgery. These rotations are intensive in-hospital experiences combined with appropriate rotations of ambulatory and special intensive service areas. The family practice residents work closely with medical students on all of the core rotations. In the second and third years of the residency program the emphasis is on ambulatory care with increasing responsibility for both inpatient and outpatient hospital care. Rotations include one month each of neurology, orthopedics, cardiology, consultation medicine, dermatology, and two months of pediatrics. There is also a three-month block of general internal medicine during which the second year residents supervise and teach the first year residents and medical students.

Five months of the second and third years are spent on the Family Practice service. The residents see patients in their modules nine half days per week and manage patients that require hospitalization from their module. Rotations are also provided in ENT, Ophthalmology, Urology, Radiology and Psychiatry. Behavioral medicine is an integrated experience throughout the residency.

Of the seven months of electives during the second and third years of the residency, one month is allotted to a rural preceptorship. This month of rural preceptorship affords the resident direct exposure to a community practice in Alabama and offers the opportunity for a “real life” experience in medical care.

Further information on the UAH-Huntsville Hospital Family Practice Residency Program is available from: Director of the Family Practice Residency, UAH Medical Clinics, 201 Governors Drive, S.W., Huntsville, Alabama 35801.

Resources and Facilities

In all aspects of its work, the UAH School of Primary Medical Care depends upon active cooperation of hospitals and medical professionals of North Alabama. Huntsville Hospital with 578 beds is the largest hospital in North Alabama and serves as the primary teaching hospital in training family practice residents.

Ownership and operational control of the hospital are vested in the Health Care Authority of the City of Huntsville. Because of its diversified medical staff, capacity, and specialized facilities, Huntsville Hospital serves as a regional referral health care center for northern Alabama and south central Tennessee. Huntsville Hospital and the Clinical Science Center and UAH Medical Clinics of the UAH School of Primary Medical Care form a geographic and functional nucleus for health-care education and delivery.

The UAH Medical Clinics building has been arranged, staffed, and equipped to facilitate demonstration of how primary physicians’ office practices, consultant services, and community resources may be integrated to provide continuing comprehensive care to individuals and families. The area of the building devoted to health services on a fee-for-service basis includes a number of practice modules, each with its own examination and consultation rooms, nursing
station, supply room, and waiting room. The modules are staffed by teams of faculty, residents, medical students, nurses, co-professionals, nursing students, and secretary-receptionists. The UAH Medical Clinics facility also has a clinical laboratory, a radiology unit, an ambulatory surgical unit, and a pharmacy. The computerized business information system makes readily available accounts receivable data for patient billings and management-systems reports.

The VA Outpatient Medical Clinic, located in the UAH Medical Clinics building, provides primary medical care on an outpatient basis for eligible veterans living in North Alabama. The Birmingham VA Medical Center continues to provide hospitalization and specialized laboratory and x-ray techniques and will continue to provide other specialty outpatient services for North Alabama veterans. The clinic in the UMC is staffed by SPMC internal medicine faculty and family practice residents, and there is medical student participation.

The UAH Clinical Science Center houses administrative and faculty offices, medical student facilities, and academic support services. The location of the school’s Health Sciences Library in this building in the Huntsville medical district makes the collection conveniently available to area physicians and other health professionals as well as to medical students, residents, and faculty. The SPMC Library also serves as the primary literature resource and repository for Huntsville Hospital.

Through the UAH Library, of which it is a component, the SPMC Health Sciences Library has access to the Redstone Scientific Information Center at Redstone Arsenal. In addition, the professional staff of the Health Sciences Library works closely with library staff and services at Lister Hill Library in Birmingham and the National Library of Medicine in Bethesda, Maryland. The MEDLINE terminal in the SPMC Health Sciences Library makes available to the faculty, residents, medical students, and other members of the Huntsville medical community on-line searches through the data base of the National Library of Medicine.
Library


Professor Perreauit; Associate Professors Herring, Kendrick, Pollard, Warren; Assistant Professors McCann, McNamara, Mead.

Library research courses provide students with the skills necessary to complete their academic studies and to prepare for successful professional lives. The method and material covered here would support students in a lifetime of research and learning.

Library research courses are offered as electives only, with the exception of BIB 230 (Library Research in Business and Economics) which is a required course for students in the College of Administrative Science.

Bibliography (BIB)

100 Introduction to Library Research 2 hrs.
Introduces students to the organization and use of university libraries and their collections. Focuses on successful research techniques utilizing reference materials, indexes and abstracts, government documents, and computerized information sources. Includes practical applications of both traditional and computerized resources. Lab Fee: Level 1. Each term.

230 Library Research for Business and Economics 1 hr.
Library research methods and information sources in business and economics; the organization of the UAH Library, basic business and economics research materials, and introduction to basic sources of information about corporations and industries. Lab Fee: Level 1. Each term.

310 Library Research for Languages and Literature 2 hrs.
Library research methods in the subject areas of language and literature; reference and research materials. Winter Term.

320 Library Research in American and European History 2 hrs.
Library research methods in American and European history; reference and research materials. Lab Fee: Level 1. Winter Term.

355 Library Research in the Physical Sciences and Engineering 2 hrs.
Research methods and materials in science and engineering. Examines information flow in the professional literature. Focuses on the use of reference materials, indexes and abstracts, and computerized sources specific to the sciences and engineering. Includes practical applications of both traditional and computerized tools and resources. Lab Fee: Level 1. Fall Term.

360 Library Research in the Social Sciences 1 hr.
Origin and terminology of the social sciences; library research methods in the social sciences (communication, education, political science, psychology and sociology); reference and research materials. Fall Term.

380 Library Research in Music 2 hrs.
Library research methods in music; production, organization, and utilization of information; reference and research materials. Fall Term.

385 Library Research in Art 2 hrs.
Library research methods in art; production, organization, and utilization of information; reference and research materials. Spring Term.
Library Research in the Life and Health Sciences 2 hrs.
Library research methods in the life and health sciences; reference and research materials. Lab Fee: Level 1. Summer Term.

Special Topics 2 hrs.
Topics of special interest in library research such as computer searching in specified disciplines. May be taken for credit more than once so long as subtitles differ. Lab Fee: Level 1.

Library Research in Life and Health Sciences 2 hrs.
See Bib. 445
Director: C. Michael Oliver, B.S., M.S., Ed.D.

The mission of the Division of Continuing Education is to provide the nontraditional student with the highest quality of learning opportunities through special activities. Credit and noncredit short courses, seminars, training programs and conferences are designed to enhance the professional and personal skills of participants while building on the strengths of the University faculty, departments, and colleges. By identifying the educational needs of individuals, businesses, government, and special interest groups, the division’s four units, described below, serve to stimulate lifelong potential through programs that are current and relevant in today’s changing world. The role of each of these units is described below.

Professional Development

Professional Development develops and presents high quality professional training and educational activities in the areas of management development, computer applications, and science and engineering. Current trends and technological breakthroughs in these areas are translated into high quality seminars and customized training activities for individual and organizational clients in business, industry, and government.

Professional Development works to increase the productivity and effectiveness of its clients by creatively linking University faculty and staff, professional organizations and external resources to provide courses ranging from entry-level skills development to the most recent advances in science, technology, and management. Beyond individual course offerings, Professional Development offers numerous certificate programs and professional certification review courses to provide in-depth study of areas that meet specific professional development needs. For more information call 1-800-448-4036.

Personal Development

Personal Development responds to the personal growth needs of the nontraditional student by providing credit and noncredit courses to serve special interests and scheduling needs. Designed to enhance and improve the quality of life for people of all ages, both credit and noncredit courses are offered in the liberal arts, administrative science, engineering, science, mathematics, and physical education areas. Programs include Elderhostel, Kids’ College, self-enrichment courses and certificate programs, aquatics, fitness, lifetime sports, travel, and recreation. In cooperation with the academic units of the University, credit courses are offered on and off campus; late night, early morning, and weekend schedules are also available. For more information call (205) 895-6007.

Listener’s License

Personal Development also coordinates the Listener’s License program, which allows participants who have or have not been previously admitted to the University to attend regular credit classes. Listeners are not required to take tests or satisfy attendance requirements. The Listener’s License fee is $59 per course and includes UAH Library privileges. To register or determine which courses are available for listening, call (205) 895-6355.

Only select courses are available through the Listener's License program. No academic or CEU credit is awarded. Participants must be at least 16 years of age or a high school senior. Students under disciplinary or academic suspension from any college or university are ineligible to register as listeners.
Conferences
The Conference Unit develops, coordinates, and promotes programs of specialized interest, primarily within the research areas of the University. Specifically, the unit sponsors national and international conferences, institutes, and workshops, in cooperation with representatives from the University, industry, professional associations, and government agencies. Although the majority of the unit’s activities are related to aerospace and defense, conferences are also established in the fields of banking, child sexual abuse intervention and education.

The goal in developing each program is to provide a comfortable, professional setting under University auspices and provide learning and networking environments which facilitate the dissemination of up-to-date information. For more information call (205) 895-6372 or 1-800-448-4035.

Space Orientation Education Project
This unit develops and conducts in-service, graduate credit programs that provide hands-on experience for elementary and secondary professional educators in the fields of science, mathematics, and social studies. In an effort to improve science education in the nation’s schools, several of the programs acquaint educators with all dimensions of current developments in aerospace activities, including their social and international implications. Programs include Space Orientation for Professional Educators (SOPE), Physical Activities for Learning Science (PALS), Capital-Area Space Orientation (CASO) and Russian Space Science. For more information call (205) 895-6835 or 1-800-448-1032.

Training and Meeting Facilities
The Division of Continuing Education utilizes the auditoriums, training facilities, classrooms, and residential accommodations located on the UAH campus. In addition, the division has its own computer training facilities equipped with two IBM Compatible laboratories and one Apple Macintosh laboratory. Sports & fitness activities are centrally located in the Spragins Hall athletic facility. Other continuing education activities are held at various locations throughout the community.

The Division of Continuing Education’s central offices are located in the Science Building.

Registration and Course Information
Registration for continuing education offerings is primarily handled by the Division of Continuing Education Business Office located in the Science Building, Room 124, or by calling (205) 895-6010 or 1-800-448-4031. Registration in noncredit courses does not require admission to UAH as a regular student; however, admission may be required in order to register for certain credit courses. Policies governing credit and noncredit courses taken through the division are as follows:

Credit Courses
If a student wishes to apply a continuing education credit course towards a degree, the student must first be admitted to UAH as a degree candidate; and second, the credit must be approved by the appropriate academic department chair.

If a student does not wish to receive academic credit for a credit course, he may choose to audit the course. The audit option has no grading, testing, or attendance requirements. This request must be made at the time of registration.

Non-Credit Courses
Continuing Education Units (CEU) are awarded to students who satisfactorily complete non-credit courses. One CEU is equal to 10 contact hours of participation in an organized continuing
education experience under responsible sponsorship, capable direction, and qualified instruction. The number of CEU's awarded for each class is designated in each course description. A record of CEU's is kept by the Division of Continuing Education, and an official transcript may be obtained upon written request. A $3 fee is charged per transcript.

A quarterly catalog and brochures of complete course description are available by calling the Division of Continuing Education Business Office at 895-6010 or 1-800-448-4031.
The University of Alabama in Huntsville

The Board of Trustees of The University of Alabama
The Honorable Guy Hunt, Governor of Alabama, President, Ex Officio

Dr. Wayne Teague, State Superintendent of Education, Member, Ex Officio

Congressional District

First
- O. H. Delchamps, Jr., Mobile, 1994

Second
- James D. Loftin, Sr., Dothan, 1992
- Maury D. Smith, Montgomery, 1995

Third
- Yetta G. Samford, Jr., Opelika, 1996
- Cleophus Thomas, Jr., Anniston, 1993

Fourth
- Garry Neil Drummond, Jasper, 1992
- John T. Oliver, Jr., Jasper, 1995

Fifth
- Peter H. Lowe, Huntsville, 1996
- Martha H. Simms, Huntsville, 1993

Sixth
- Frank H. Bromberg, Jr., Birmingham, 1992

Seventh
- Sandral Hullett, M.D., Eutaw, 1995
- George S. Shirley, Tuscaloosa, 1993
- Cordell Wynn, Tuscaloosa, 1997

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for Enrollment Services
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Faculty

(Date refers to original appointment to the university; asterisk designates Graduate Faculty.)

ABUSHAGUR, MUSTAFA, B.Sc. (Tripoli University), M.Sc., Ph.D. (California Institute of Technology). Associate Professor of Electrical Engineering, 1984.*

ADAMS, CURTIS H., B.S. (Mississippi State University), M.S.Ed. (Henderson State Teachers College), Ph.D. (Mississippi State University). Professor Emeritus, 1965.

ADAMS, MELVILLE W., B.S. (Geneva College), M.A.T. (Mankato State College), M.B.A., Ph.D. (University of Tennessee). Assistant Professor of Management, 1989.*


ADHAMI, REZA, B.S.E., M.S.E., Ph.D. (University of Alabama in Huntsville). Associate Professor of Electrical Engineering, 1984.*


AMES, KAREN K., B.S. (Stanford University), Ph.D. (Cornell University). Associate Professor of Mathematical Sciences, 1990.*

AMIN, ASHOK T., B.S. (University of Baroda, India), M.S., (University of Tennessee), Ph.D. (Northwestern University). Associate Professor of Computer Science, 1984.*

ANDERSON, ELMER E., A.B. (Occidental College), M.S. (University of Illinois), Ph.D. (University of Maryland). University Professor of Physics, 1979.*

ANDERSON, GLORIA J., R.N. (Mobile General Hospital School of Nursing), B.S.N. (Indiana University), M.S.N. (University of Alabama, Birmingham). Associate Professor of Nursing, 1972.

ARENDALE, WILLIAM F., B.S. (Middle Tennessee State University), M.S., Ph.D. (University of Tennessee). Professor Emeritus, 1964.

ATEN, LAURIE ANNE, B.S. (University of Nebraska-Lincoln), M.D. (University of Nebraska College of Medicine). Research Assistant Professor, Aerospace Medicine/Family Medicine, 1990.

AUDEH, NADEEM F., B.S. (South Dakota State College), M.S., Ph.D. (Iowa State University). Professor of Electrical Engineering, 1964.*

BAIRD, JAMES K., B.S. (Yale University), M.A., Ph.D. (Harvard University). Professor of Chemistry, 1982.*

BANERJEE, PARTHA P., B.Tech (Indian Institute of Technology), M.S., Ph.D. (University of Iowa). Associate Professor of Electrical and Computer Engineering, 1991.
BARR, THOMAS A., B.S. (University of Chattanooga), M.S., Ph.D. (Vanderbilt University). Research Professor of Physics, 1982.*

BATCHEDLER, WALTER I., B.S. (New Hampshire College); Ph.D. (Virginia Polytechnic Institute). Assistant Professor of Accounting, 1988.*


BIGGS, ALBERT W., B.S. (Washington University), M.S. (Stanford University), Ph.D. (University of Washington), P.E. Professor of Electrical Engineering, 1984.*

BILLINGS, C. DAVID, B.S. (Southwest Missouri State University), Ph.D. (University of Missouri, Columbia). Dean of the College of Administrative Science and Professor of Finance, 1981.*


BOWER, MARK V., B.S.E., M.S.E., Ph.D. (University of Michigan), P.E. Assistant Professor of Mechanical Engineering, 1984.*

BOYER, D. ROYCE, B.M. (Butler University), M.A. (Catholic University of America), D.M.A. (University of Texas at Austin). Professor of Music, 1966.

BRAINERD, JEROME J., B.S., M.S., (University of Notre Dame), B.F.T. (Thunderbird Graduate School of International Management), B.S.Ed., M.A. (Ohio State University), Ph.D. (University of Michigan). Associate Professor of Education, 1974.*


BROWN, ROBERT A., B.S. (U.S. Naval Academy), M.S., Ph.D. (Ohio State University), P.E. Professor Emeritus, 1967.*

BRYSON, ROSCOE E., JR., B.B.A. (Memphis State University), M.B.A., Ph.D. (Georgia State University), C.P.A. Assistant Dean of the College of Administrative Science and Associate Professor of Accounting, 1976.*

BUKSA, IRENA, M.A. (University of Warsaw, Poland), Doctor of Arts (Syracuse University). Assistant Professor of Slavic Languages, 1990.

BURGE, JANET MARIE, R.N. (Hendrick Memorial Hospital School of Nursing), B.S. (Hardin Simmons University), M.N. (Emory University), Ph.D. (University of Florida). Professor of Nursing, 1980.*
BURGER, KENNETH J., B.S. (North Dakota State University), M.B.A. (Kent State University), D.B.A. (University of Kentucky). Assistant Professor of Marketing, 1986.*

BURKS, EDDY J., B.S. (University of Alabama, Tuscaloosa), M.B.A., Ph.D. (Louisiana Tech University). Assistant Professor of Accounting, 1989.*


BUTTS, TED M., B.S. (Mississippi State University), M.A., Ph.D. (University of Alabama, Tuscaloosa). Assistant Professor of Education, 1968.*

CACHAN, MANUEL, B.A. (Rollins College), M.A., Ph.D. (Tulane University). Assistant Professor of Spanish, 1989.


CAMPBELL, P. SAMUEL. B.S. (Marietta College), M.S. (Ohio University), Ph.D. (Purdue University). Chair and Professor of Biological Sciences, 1973.*

CAMPBELL, WARREN C., B.S. (University of Alabama, Tuscaloosa), M.S. (University of Alabama, Huntsville), Ph.D. (Colorado State University). Associate Professor of Civil Engineering, 1991.*

CARPENTER, SANDRA L., B.A. (California State University), Ph.D. (University of California). Assistant Professor of Psychology, 1989.*

CHAN, CHIA HWA, B.S., Ph.D. (London University). Professor of Physics, 1970.*

CHANG, MOU-HSIUNG, B.S. (Chung-Hsing University), M.S., Ph.D. (University of Rhode Island). Professor of Mathematical Sciences, 1974.*

CHEN, CHIEN P., B.S. (National Taiwan University), M.S., Ph.D. (Michigan State University). Associate Professor of Chemical Engineering, 1986.*

CHENG, HAI-YUIN, B.S. (College of Chinese Culture), M.S., Ph.D. (Boston College). Assistant Research Professor of Physics, 1986.

CHIPMAN, RUSSELL A., B.S. (Massachusetts Institute of Technology), B.S. (California Institute of Technology), M.S., Ph.D. (University of Arizona). Associate Professor of Physics, 1988.*

CHITTUR, K. K., B.Tech. (Indian Institute of Technology, Bombay, India), Ph.D. (Rice University). Associate Professor of Chemical Engineering, 1991.*

CHOLEWINSKI, JANE E., B.S.N., M.S.N. (University of Alabama, Birmingham). Ph.D. (University of Alabama, Tuscaloosa). Associate Dean and Associate Professor of Nursing, 1979.*

CHRISTY, JOHN R., B.A. (California State University), M.Div. (Golden Gate Baptist Theological Seminary), M.S., Ph.D. (University of Illinois). Assistant Professor of Atmospheric Science, 1991.*

CHUNG, T.J., Engineering Diploma (Seoul National University), M.S., Ph.D. (Oklahoma State University). Professor of Mechanical Engineering, 1970.*
CLING, ANDREW D., B.A. (University of Missouri), M.A., Ph.D. (Vanderbilt University). Assistant Professor of Philosophy, 1988.

COBB, SHANNON S., B.S. (Florida State University), M.S., Ph.D. (University of Southwestern Louisiana). Assistant Professor of Mathematical Sciences, 1990.*

COBLE, HAROLD DWAIN, B.S., (Kearney State College), M.S., Ph.D. (University of Nebraska). Associate Professor of Chemistry, 1966.*

COFFIELD, KENNETH E., A.B. (University of Kansas), M.A. (DePaul University), M.A., Ph.D. (University of Missouri). Associate Professor Emeritus, 1966.

COLCLOUGH, GLENNA, B.A., M.A. (Kent State University), Ph.D. (University of Georgia). Associate Professor of Sociology, 1984.*

COLEMAN, HUGH W., B.S. (Mississippi State University), M.S., Ph.D. (Stanford University). Eminent Scholar in Propulsion and Professor of Mechanical Engineering, 1991.*

COMFORT, RICHARD H., A.B. (Harvard University), M.S., Ph.D. (University of Alabama, Huntsville). Research Professor of Physics, 1977.

CONTRERAS, FRANK, B.M. (Millikin University), M.M. (East Carolina University), D.M.A. (West Virginia University). Assistant Professor of Music, 1977.

COOK, F. LEE, B.S., M.S., Ph.D. (Georgia Institute of Technology). Associate Dean, College of Science, Associate Professor of Mathematical Sciences, Director, Institute for Science Education, 1967.*


COST, THOMAS L., B.S.A.E. (University of Alabama, Tuscaloosa), M.S.A.E. (University of Illinois), Ph.D. (University of Alabama, Tuscaloosa), P.E. Professor of Mechanical Engineering, 1985.*


CROWDER, DAVID, B.S. (Birmingham Southern College), M.D. (University of South Alabama School of Medicine). Assistant Professor of Internal Medicine, 1989.

CRULL, MICHELLE, B.S., M.S. (University of Mississippi), Ph.D. (Vanderbilt University). Assistant Professor of Civil Engineering, 1988.*

CRUMP, WILLIAM J., B.S. (University of Georgia), M.D. (Vanderbilt University School of Medicine). Professor of Family Medicine, 1983.

DANIELL, MARSHA D., B.S. (University of Alabama in Huntsville), M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Family Medicine, 1989.

DASHER, GLENN T., B.A. (University of Georgia), M.F.A. (Indiana University). Chair and Associate Professor of Art, 1985.

DAVIS, CARL G., B.A. (Georgia Institute of Technology), M.S., Ph.D. (University of Alabama, Tuscaloosa). Chair and Professor of Computer Science, 1986.*

DELUGACH, HARRY S., B.A. (Carleton College), M.S. (University of Tennessee, Knoxville), Ph.D. (University of Virginia). Assistant Professor of Computer Science, 1990.*


DILLARD, NANCY F., B.A., M.A., (University of South Carolina), Ph.D. (University of Tennessee). Assistant Professor of English, 1972.*

DIMOPOULLOS, GEORGE T., B.S., M.S. (Pennsylvania State University), Ph.D. (Michigan State University). Professor of Biological Sciences, 1980.*


DITTMAR, MARY LYNNE, B.A., M.A., Ph.D. (University of Cincinnati). Assistant Professor of Psychology, 1989.*


DUNAR, ANDREW J., B.A. (Northwestern University), M.A. (University of California, Los Angeles), Ph.D. (University of Southern California). Associate Professor of History, 1984.*

DUTHIE, J. GRAEME, B.Sc. (University of Aberdeen, Scotland), Ph.D. (University of Bristol, England). Dean, College of Science, and Professor of Physics, 1985.*


ELBERT, FREDERICK J., B.A. (Texas A&M University), M.A., Ph.D. (Vanderbilt University). Assistant Professor of Philosophy, 1989.

ELEY, MICHAEL H., B.A. (West Georgia College), M.S., Ph.D. (University of Georgia). Associate Professor of Biological Sciences, 1974.*

ELLIS, JACK D., B.A. (Baylor University), M.A., Ph.D. (Tulane University). Dean of College of Liberal Arts and Professor of History, 1992.

ELSHAMY, MAGED A.. B.S. (Ain Shams University, Cairo, Egypt), B.S. (Al-Azhar University, Cairo, Egypt), M.S. (Washington University), Ph.D. (University of Georgia). Associate Professor of Mathematical Sciences, 1990.*

EMERSON, MERLE THOMAS, B.S. (Whitworth College), M.S. (Washington State University), Ph.D. (University of Washington). Associate Professor of Chemistry, 1968.*

EMSLIE, A. GORDON, B.Sc., Ph.D. (University of Glasgow, Scotland). Chair and Professor of Physics, 1981.*

EPPERSON, JAMES F., B.S. (University of Michigan), M.S., Ph.D. (Carnegie-Mellon University). Assistant Professor of Mathematical Sciences, 1987.*

ESSENWANGER, OSKAR M., B.S. (Technical University of Danzig), M.S. (University of Vienna), Ph.D. (University of Wuenszburg). Research Professor of Atmospheric Science, 1989.

EVANS, DORLA A., B.S. (University of Texas, Austin), M.B.A. (University of Houston, Clear Lake), Ph.D. (University of Arkansas). Associate Professor of Finance, 1991.

EVERETT, WARREN DOUGLAS, B.S. (U.S. Air Force Academy), B.M.S. (Dartmouth Medical School), M.P.H.(Harvard School of Public Health), M.D. (University of Washington School of Medicine). Chief of Family Medicine Program and Associate Professor of Family Medicine, 1990.

FARR, CAROL A., B.A., M.A., Ph.D. (University of Texas, Austin). Assistant Professor of Art History, 1990.


FINLEY, NANCY, J., B.A., M.A., Ph.D. (University of Oklahoma). Chair and Associate Professor of Sociology, 1982.*

FLEMING, JAMES W., B.S., M.Ed. (Indiana University, Pennsylvania), Ph.D. (Michigan State University). Associate Professor of Pediatrics and Adjunct Associate Professor of Family Medicine, 1974.

FLOYD, STEPHEN A., B.A. (Northeastern University), M.S.B.A. (University of Massachusetts), Ph.D. (University of Georgia). Assistant Professor of Management Information Systems, 1985.*

FORTÉ, ALDO, D.Sc. (University of Havana, Cuba). Associate Professor Emeritus, 1966.*


FRANCO-BROWDER, SALVADOR, B.S. (University of Mexico), M.D. (National Medical School, National University of Mexico). Associate Professor of Internal Medicine, 1977.

FRANZ, FRANK A., B.S. (Lafayette College), M.S., Ph.D. (University of Illinois). President of the University of Alabama in Huntsville and Professor of Physics, 1991.


FREDERICK, ROBERT A., B.S., M.S., Ph.D. (Purdue University). Assistant Professor of Mechanical Engineering, 1991.*


FRIEDMAN, MARK J., B.S. (Moscow Physical Technical Institute, USSR), M.A., Ph.D. (Cornell University). Associate Professor of Mathematical Sciences, 1987.*

GARSTKA, WILLIAM R., B.A. (University of California), Ph.D. (Harvard University). Associate Professor of Biological Sciences, 1982.*
GERBERDING, RICHARD A., B.A. (University of Minnesota), M.A. (University of Manitoba), Ph.D. (Oxford University). Associate Professor of History, 1984.*


GILBERT, JOHN A., B.S., M.S. (Polytechnic Institute of Brooklyn), Ph.D. (Illinois Institute of Technology). Professor of Mechanical Engineering, 1985.*


GRANT, SILAS W., B.A. (University of Texas), M.D. (University of Texas Medical Branch at Galveston). Professor Emeritus, 1973.


GRAVES, SARA J., B.S., M.A. (University of Alabama, Tuscaloosa), Ph.D., (University of Alabama, Huntsville). Associate Professor of Computer Science, 1978.*

GREEN, DAVID E., B.A. (The University of Alabama, Huntsville), M.D. (University of Alabama School of Medicine). Assistant Professor of Obstetrics and Gynecology, 1988.

GREGORY, JOHN, B.Sc., A.R.C.S., Ph.D. (Imperial College of Science and Technology, London). Professor of Chemistry and Director of Alabama Space Grant Consortium, 1973.*

GROHSE, EDWARD W., B.Ch.E., M.Ch.E. (Cooper Union Institute of Technology), Ph.D. (University of Delaware). Professor Emeritus, 1960.

GUINN, GERALD R., B.S. (Auburn University), M.S. (Purdue University), Ph.D. (University of Alabama, Huntsville). Professor of Mechanical Engineering, 1990.

HAINES, DONALD N., B.S. (Colorado School of Mines), M.S., Ph.D. (Montana State University). Assistant Professor of Physics, 1990.*


HARALICK, JOY G., A.B., M.A. (George Washington University), Ph.D. (University of North Carolina). Associate Professor of Sociology, 1978.*

HARRIS, J. MILTON, B.S. (Auburn University), Ph.D. (University of Texas, Austin). Distinguished Professor of Chemistry and Adjunct Professor of Biological Sciences, 1973.*

HARWELL, KENNETH E., B.S. (University of Alabama, Tuscaloosa) M.S., Ph.D. (California Institute of Technology). Associate Provost and Vice President for Research and Professor of Aerospace and Mechanical Engineering, 1989.


HAWK, CLARK W., B.S. (Pennsylvania State University), M.S., Ph.D. (Purdue University). Professor of Mechanical Engineering and Director of Propulsion Center, 1991.*

HAYASHI, TAKAYOSHI, B.S., M.S., Ph.D. (Waseda University, Tokyo, Japan). Assistant Professor of Chemistry, 1985.

HAYS, DANIEL, B.A., M.A., Ph.D. (University of Missouri). Associate Professor of Psychology, 1973.*

HEAMAN, DORIS, R.N. (Deaconess Hospital, Missouri School of Nursing), B.S.N. (University of Alabama, Huntsville), M.S.N., D.S.N. (University of Alabama, Birmingham). Assistant Professor of Nursing, 1975.*

HELLER, HERTHA D., Perm. Teachers Certificate (Teachers College for Women, Hanover, Germany), M.A. (Vanderbilt University). Associate Professor Emerita, 1965.

HENZE, REET L., B.S.N. (Gustavus Adolphus College), M.S.N. (University of Colorado). Associate Professor of Nursing, 1973.*


HILLMAN, LLOYD W., B.S. (University of Arizona), Ph.D. (The Institute of Optics, University of Rochester). Assistant Professor of Physics, 1989.*

HINCKER, ETTA ANNE, B.S. (St. Xavier College), M.S.N.E. (Catholic University of America), Ed.D. (Memphis State University). Professor Emerita, 1979.*

HO, FAT DUEN, B.S.E.E. (South China Technological Institute, China), B.A. (Chu Hai College, Hong Kong), M.S.E.E., Ph.D., (Southern Illinois University, Carbondale). Professor of Electrical Engineering, 1980.*

HOCK, ROMETTA M. B.S.N. (College of St. Teresa), M.S.N. (Texas Woman's University). Clinical Instructor of Nursing, 1990.

HODGES, H. EUGENE, A.B., M.A. (University of Georgia), Ph.D. (University of Minnesota). Associate Professor of Sociology, 1975.*

HOFMANN, MARTIN O., B.S. (Technische Universitat Wien), M.S., Ph.D. (Vanderbilt University). Assistant Professor of Electrical and Computer Engineering, 1988.*

HOGAN, DEBORAH L., B.S. (Memphis State University), M.D. (East Tennessee State University College of Medicine). Assistant Professor of Psychiatry, 1989.

HOGAN, JOHN RUDOLPH, B.S. (King College), M.D. (East Tennessee State University). Clinical Instructor of Obstetrics and Gynecology, 1990.

HOOPER, JAMES W., B.S. (Florence State University), M.S. (Auburn University), M.S. (University of Missouri), Ph.D. (University of Alabama, Birmingham). Professor of Computer Science, 1980.*

HORNBERGER, BOYCE ANDREW, B.S. (University of Southern Mississippi), M.A. (University of Texas), M.D. (University of Mississippi School of Medicine). Assistant Professor of Pediatrics, 1990.


HUBBARD, WILLIAM H., B.S. (University of Florida), M.D. (Duke University School of Medicine). Acting Chief of Family Medicine Programs, Acting Director of Family Practice Residency Program, and Associate Professor of Family Medicine, 1988.

HUBBLES, WILLIAM A. JR., B.A., M.D. (Vanderbilt University). Assistant Professor of Internal Medicine, 1991.

HUGHES, BRENT D., B.S.N. (Loma Linda University), C.N.M. (Meharry Medical College School of Nurse Midwifery). Clinical Associate/OBSTETRICS AND GYNECOLOGY, 1990.

HUNG, RU J., B.S. (National Taiwan University), M.S. (University of Osaka), Ph.D. (University of Michigan), P.E. Professor of Mechanical Engineering and Adjunct Professor of Atmospheric and Environmental Science, 1972.*


INTERRANTE, LESLIE D., B.S.E., M.S.E., Ph.D. (University of Central Florida). P.E. Assistant Professor of Industrial and Systems Engineering, 1991.*

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JACKSON, CONRAD N., B.S. (Louisiana Tech University), M.B.A. (University of Tulsa), Ph.D. (Purdue University). Associate Professor of Management, 1989.*

JAMES, ROBERT E., B.S. (Carnegie Institute of Technology), M.A. (Hollins College), Ph.D. (University of Tennessee). Associate Professor of Psychology and Adjunct Associate Professor of Communication Arts, 1971.*

JANIK, DANIEL SCOTT, B.A. (University of Washington), M.P.H. (University of California), M.D. (Loma Linda University). Associate Research Professor of Family Medicine, 1989.

JAREM, JOHN M., B.S., M.S., Ph.D (Drexel University). Professor of Electrical and Computer Engineering, 1987.*

JOHANNES, JAMES D., B.S. (Arizona State University), M.S. (University of Alabama, Huntsville), Ph.D. (Vanderbilt University). Associate Dean of Graduate Studies and Professor of Computer Science, 1974.*
JOHNSON, ADRIEL D., A.B. (Washington University in St. Louis), M.S. (Tennessee Technological University), M.S. (University of Alabama in Huntsville), Ph.D (North Carolina State University). Assistant Professor of Biological Sciences, 1989.

JOHNSON, BOBBY N., B.S. (University of Alabama, Tuscaloosa), M.D. (University of Alabama School of Medicine). Associate Professor of Internal Medicine, 1990.

JOHNSON, CARROLL D., B.S., M.S. (University of Tennessee), Ph.D (Purdue University). Distinguished Professor of Electrical Engineering, 1963.*


KARR, GERALD R., B.S.A.A.E., M.S., Ph.D. (University of Illinois). Chair and Professor of Mechanical Engineering, 1972.*

KATSINIS, CONSTANTINE, B.S. (National Technical University of Athens), M.S., Ph.D. (University of Rhode Island). Associate Professor of Electrical Engineering. 1985.


KENDRICK, AUBREY WAYNE, B.A. (Georgia Southern College), M.S.L.S., M.B.A. (Florida State University). Associate Professor of Bibliography, 1985.

KIDDER, STANLEY Q., B.S. (Harvey Mudd College), M.S., Ph.D. (Colorado State University). Academic Program Coordinator for Atmospheric Science, 1990.*

KILGO, REESE D., B.A. (University of Alabama, Tuscaloosa), M.Ed. (University of Florida), Ph.D. (University of Texas). Associate Professor Emerita, 1966.

KIRKPATRICK, SUE W., B.Sc., M.Sc., Ph.D. (Ohio State University). Chair and Professor of Psychology, 1972.*

KNIGHT, PATRICE, B.S. (Auburn University), M.D. (University of Alabama School of Medicine). Associate Professor of Pediatrics, 1983.

KNUPP, KEVIN R., B.S. (Iowa State University), M.S., Ph.D. (Colorado State University). Assistant Professor of Atmospheric Science, 1991.*

KOWEL, STEPHEN T., B.S.E.E. (University of Pennsylvania), M.S.E.E. (Polytechnic University), Ph.D. (University of Pennsylvania). Chair and Professor of Electrical and Computer Engineering. 1990.*

KRAMER, ALAN, B.A. (Drew University), M.D. (New York University School of Medicine). Chief of Psychiatry Programs and Professor of Psychiatry, 1986.

KRAY, SUSAN, A.B., M.A. (University of California, Berkeley), M.P.W. (University of Southern California), Ph.D. (University of Illinois, Urbana-Champaign), Assistant Professor of Communication Arts, 1991.


LANG, MARGARET ELLEN, B.A. (University of Dallas), M.A. Ph.D. (University of Texas, Austin). Assistant Professor of Philosophy, 1989.
LAWTON, ROBERT O., B.S. (Duke University), Ph.D. (University of Chicago). Associate Professor of Biological Sciences, 1980.*

LEE, JAESUB, B.A. (Chonnam National University, Kwangju, Korea), M.A. (Auburn University), Ph.D. (University of Texas, Austin). Assistant Professor of Communication Arts, 1992.

LEE, RICHARD WAYNE, B.A. (Florida State University), M.A. (Emory University). Assistant Professor of Sociology, 1992.

LEONARD, KATHLEEN M., B.S., M.S. (University of Wisconsin), Ph.D. (University of Alabama, Huntsville). Assistant Professor of Civil Engineering, 1991.*

LESLIE, THOMAS M., B.S. (Rider College), Ph.D. (University of Notre Dame). Associate Professor of Chemistry, 1990.*

LETHBRIDGE, DONA J., Diploma (Royal Columbian Hospital School of Nursing, Canada), B.Sc.N. (University of British Columbia), M.A., Ph.D. (New York University). Associate Professor of Nursing, 1992.*

LI, JIA, B.S. (Hunan University), M.S. (Huazhong University of Science and Technology), Ph.D. (University of Tennessee). Assistant Professor of Mathematical Sciences, 1990.*

LIGHT, JAMES RANDELL, B.S. (University of Alabama, Tuscaloosa), M.D. (University of Alabama School of Medicine). Assistant Professor of Obstetrics and Gynecology, 1986.

LINDER, MICHAEL M., B.S. (Memphis State University), M.D. (University of Tennessee for Health Sciences). Associate Professor of Family Medicine, 1990. Director of Family Practice Residency Program, 1990.

LOO, BOON, B.S., M.S. (University of Wellington, New Zealand), M.A., Ph.D. (University of Illinois, Chicago). Professor of Chemistry, 1982.*

LUMPKIN, RICHARD S., B.S. (University of Texas, Austin), Ph.D. (University of North Carolina). Assistant Professor of Chemistry, 1990.*

MACDOUGALL, JOHN J., B.A. (Boston College), B.S. (Georgetown School of Foreign Service), M.S. (Massachusetts State College), M.A., Ph.D. (University of Michigan). Associate Professor of Political Science, 1975.*

MACHADO, MARCOS E., B.S. (University of LaPlata), M.S. (University of Colorado), Ph.D. (University of LaPlata). Associate Research Professor of Physics, 1990.*

MANGUM, DONALD K., B.A. (University of Southern Mississippi), M.A. (Louisiana State University), Ph.D. (University of Southern Mississippi). Assistant Professor of English, 1989.


MARTINE, BRIAN J., B.A. (Allegheny College), M.A., Ph.D. (Pennsylvania State University). Chair and Associate Professor of Philosophy, 1983.

MCCALISTER, DONALD V., A.B. (Fresno State College), Ph.D. (University of Tennessee). Director of Medical Student Affairs and Professor of Medical Sociology, 1972.

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