1985-1987 Undergraduate Catalog

University of Alabama in Huntsville

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Undergraduate Catalog
1985-1987

The University of Alabama
in Huntsville
The University
Of Alabama
In Huntsville

Undergraduate
Catalog
1985-1987
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 or rules 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.
### Class Periods

<table>
<thead>
<tr>
<th>Period</th>
<th>Time</th>
<th>Period</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>M</td>
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</tr>
<tr>
<td>B</td>
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<td>P</td>
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<tr>
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<td>Q</td>
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<tr>
<td>G</td>
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<td>8:10 p.m.-10:10 p.m.</td>
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<tr>
<td>H</td>
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<tr>
<td>R</td>
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</tr>
<tr>
<td>S</td>
<td>6:00 p.m.-8:00 p.m. (MW only)</td>
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<tr>
<td>T</td>
<td>8:10 p.m.-10:10 p.m. (MW only)</td>
<td></td>
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</tr>
</tbody>
</table>

### The UAH Term System

UAH has four identical terms, each spanning twelve weeks. Credit for course work is granted in standard semester-hour units.

### General Information Center

The General Information Center located in Room 118 of the University Center is available to all students, prospective students, and the public to obtain information about The University of Alabama in Huntsville.
ACADEMIC CALENDAR 1985-86

**Fall Term**
- Early Registration
- Residual ACT: June 27, July 11, August 8, August 22
- Application Deadline: August 13
- Holiday: September 2
- Registration: September 3
- Classes Begin—8:00 a.m.: September 5
- Late Registration: September 5, 6
- Deferred Exams (Summer term): September 7
- Study Day: November 14
- Examinations: November 15, 16, 18, 19
- Last Day Fall Term: November 19
- Commencement: November 24

**Winter Term**
- Early Registration: October 10—23
- Residual ACT: October 31
- Application Deadline: November 11
- Thanksgiving Holidays: November 28, 29
- Registration: December 2
- Classes Begin—8:00 a.m.: December 4
- Late Registration: December 4, 5
- Deferred Exams (Fall Term): December 7
- Student Christmas Holidays: December 21-January 1
- Classes Resume—8:00 a.m.: January 2
- Study Day: February 25
- Examinations: February 26, 27, 28, March 1
- Last Day Winter Term: March 1

**Spring Term**
- Early Registration: January 16-29
- Residual ACT: February 13
- Application Deadline: February 14
- Registration: March 7
- Holiday: March 10
- Classes Begin—8:00 a.m.: March 11
- Late Registration: March 11, 12
- Deferred Exams: March 15
- Examinations: May 20, 21, 22, 23
- Last Day Spring Term: May 23
- Holiday: May 26
- Commencement: May 31

**Summer Term**
- Early Registration: April 17—30
- Residual ACT: May 8
- Application Deadline: May 15
- Registration: June 5
- Classes Begin—8:00 a.m.: June 7
- Late Registration: June 9, 10
- Deferred Exams (Spring Term): June 14
- Holiday: July 4
- Study Day: August 19
- Examinations: August 20, 21, 22, 23
- Last Day Summer Term: August 23
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Legend of Abbreviations

ACT—American College Testing Program
AOC—Area of Concentration
AP—Advanced Placement Program
CLEP—College Level Examination Program
DCE—Division of Continuing Education
EOC—Educational Opportunity Center
ETS—Educational Testing Service
FFS—Family Financial Statement
GED—General Educational Development Testing Program
GER—General Education Requirements
GPA—Grade Point Average
GRE—Graduate Record Examination
IPG—Irregular Postgraduate
LSAT—Law School Admissions Test
MAT—Miller Analogies Test
MCAT—Medical College Admissions Test
NEAS—National Engineering Aptitude Search
NTE—National Teacher Examination
QPA—Quality Point Average
SER—Student Eligibility Rating
TOEFL—Test of English as a Foreign Language
The University of Alabama in Huntsville is dedicated to the intellectual, aesthetic, social, technological, and economic advancement of the state and region it serves and is a competent member of the national and international academic communities. Such membership requires constant attention to teaching, research, and interaction with local, state, and regional communities. It demands a steady allegiance to academic values, an atmosphere conducive to the unhindered pursuit of knowledge, and the education of students as thinking individuals. Basic to the establishment and maintenance of its identity as a true university is a strong program in the liberal arts and sciences, which continues to form the core of education. This institution intends to expand its programs by pursuing the special advantages of its environment.

Its location in the midst of an important government and industrial research center gives its unusual opportunities for new and creative programs in engineering and natural sciences. Huntsville, a city which has peacefully managed drastic social and economic changes, also offers a rich field of discovery in social sciences. Because many citizens in this area have well developed cultural interests and talents, the university is encouraged to provide exceptional programs in the humanities.

In the development of these programs, the university is incorporating new academic disciplines, enriching traditional studies, and creating fresh academic approaches as faculty and students concentrate on the vastly complex problems of contemporary life.
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. UAH is accredited by the Southern Association of Colleges and Schools.

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 our 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.

The degree programs at UAH are administered by the Schools of Administrative Science, Arts, Humanities and Social Sciences, Engineering, Science, Nursing, and Graduate Studies. Medical students taking clinical clerkships and electives at the UAH School of Primary Medical Care are admitted and receive their M.D. degrees through the School of Medicine in Birmingham.

The Division of Continuing Education offers noncredit activities in a variety of subjects for individual enrichment and professional advancement. The division offers professional development and certificate programs primarily for adults who are not interested in pursuing a traditional degree but who desire an organized sequence of study in a specialized area at university level.

The UAH Library is being developed to give maximum support to the academic and research programs. Its more than 270,028 volumes of monographs and
journals reflect great care in selection; more than 271,673 items such as micro-
fiche, federal documents, maps, technical reports, and sound recordings provide
supplementary sources for special purposes. Acquisition of library resources has
high priority. Courses in bibliography are offered by the professional library staff.

The availability of the Redstone Scientific Information Center, with holdings in
science and technology that make it possibly the finest technical library in the
Southeast, adds substantial strength to UAH programs, particularly at graduate
level.

Students admitted to UAH have academic records that compare favorably with
those in larger and older educational institutions. Through evaluations of previous
academic records and entrance examinations, UAH attempts to ensure admission
to those who are well qualified. Faculty members are present to help but not
oversee students. Students, presumed mature, are expected to seek counseling and
special assistance as needed.

The faculty has been assembled from leading universities throughout the United
States and abroad. Its quality is evidenced in its writing, research, and reputation
in the academic world.
Facilities

The 337-acre UAH campus is in northwest Huntsville adjacent to Research Park. The 14 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 and offices for the School of Administrative Science, the School of Arts, Humanities and Social Sciences, and the School of Graduate Studies.

The Science Building contains classrooms and laboratories for programs in biological, environmental, and physical sciences and offices for the dean and some of the faculty in the School of Science. The building has modern laboratory equipment including a penthouse containing a live animal room and greenhouse. Interactive computer terminal facilities and the University's audio visual service office are also located here.

The former Auto Check building houses the Kenneth E. Johnson Environmental and Energy Center, the Alabama Solar Energy Center and the office of the state climatologist.

The UAH Library, a three-story, two-building unit, is made up of the first two phases of a library complex that will form the center of a cluster of academic buildings projected for the campus. The library has open-access stacks and a capacity of approximately 300,000 volumes. Services of subject specialists are available for students and faculty.

Madison Hall contains executive administrative offices, classrooms, and the Department of Mathematics and Statistics.

The Research Institute houses Research Administration and laboratory space and equipment to support experimental research. Additionally, it houses the university computer facility.

The Engineering Building is the newest building on campus and is being constructed in two phases. Phase One is complete and houses the Office of the Dean, and offices, classrooms and laboratories for the Departments of Electrical and Computer Engineering and Mechanical Engineering. Phase Two, to be completed during 1985, will house the offices for the Department of Industrial and Systems Engineering as well as additional classrooms and laboratories.

The newly remodeled and enlarged 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, and the Office of Testing Services and Exponent. It has facilities for
dining, assemblies, meetings, dramatic presentations and recreational activities as
well as housing the University Bookstore.

The Humanities Building, a two-unit complex, houses many of the faculty of
music, art, foreign languages and history. In addition to instructional programs in
the humanities, it contains large lecture rooms for varied university programs.

The School of Nursing Building is a contemporary triangular structure. Its four
levels contain administration and faculty offices, classrooms, service areas, and a
large and well equipped Learning Research Center.

The Continuing Education Center contains the administrative offices and class­
rooms of the Division of Continuing Education.

The Marion Beirne 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, handball 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 Reproduction and Duplica­
tion Department.

The Physical Plant Building contains offices, shops, and storage areas for the
Physical Plant Department, which include administrative offices, building ser­
vices, campus police, campus safety, general maintenance, grounds services, and
the motor pool.

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 Audiovisual and
Production Services. The building is the headquarters for the school’s medical
student, continuing medical education, and emergency medical technician-paramedic
training programs. It contains classrooms, faculty offices, and research laboratories.

Adjacent to the Clinical Science Center is the Ambulatory Care Center, 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.

University Housing

The university provides both on-campus and off-campus housing for a limited
number of students. The university owns 88 two and three-bedroom apartment
units within walking distance of the campus. On-campus residence facilities are
available for full-time single students, handicapped students, and married students
without children. The new on-campus residence halls consist of one-bedroom
efficiency apartments for married and handicapped students and three-bedroom
suites for single students.
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 the gracious facility.
Admissions Information

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. It is necessary to apply for admission well in advance of the date of proposed entrance but not more than one calendar year in advance. See UAH calendar for application deadline dates for specific terms.

Prospective freshmen 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 their junior year. Work completed in the senior year and confirmation of graduation will be reviewed before a student’s admission is final.

Application forms, detailed instruction as to how to apply, 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 admitted; additional copies are available for purchase in the UAH bookstore.

Information for prospective students is available through the Office of Admissions. Campus tours on individual or group basis are available, as well as conferences with faculty members, who welcome the opportunity to meet interested individuals and discuss their enrollment plans and opportunities at UAH.

Admission to the Freshman Class

Admission as a regular student in the freshman class at UAH is a decision based on performance in academic subjects in high school and scores from college entrance tests. The two factors are considered together, with higher results in one area able to offset lower outcome in the other. Students with ACT scores of less than 16 or SAT combined scores of less than 800 are not usually admitted as regular students.

Plan A

High school graduates may be admitted as freshmen on the basis of acceptable high school records and scores achieved on the American College Testing (ACT) program examinations. (ACT scores are not required for applicants who graduated from high school five or more years ago.)

An applicant should present a minimum of 16 high school units including specified units as indicated on the chart below:
High School Units
(1 unit = 1 year of course work)

UAH School

<table>
<thead>
<tr>
<th>Administrative Science</th>
<th>English</th>
<th>Social Studies</th>
<th>Algebra</th>
<th>Geometry</th>
<th>Chemistry/ Physics</th>
<th>Biology</th>
<th>Algebra II/ Trig</th>
<th>Electives</th>
</tr>
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<tbody>
<tr>
<td>Arts, Humanities and Social Sciences</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 (R)</td>
<td>1 (R)</td>
<td>1 (R)</td>
<td>5 Academic</td>
</tr>
<tr>
<td>Engineering</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5 Academic</td>
</tr>
<tr>
<td>Science</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1 (R)</td>
<td>1 (R)</td>
<td>1&amp;1 (R)</td>
<td>6 Academic</td>
</tr>
<tr>
<td>Nursing</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1 (R)</td>
<td>1 (R)</td>
<td></td>
<td>5 Academic</td>
</tr>
</tbody>
</table>

NOTE (R) means recommended

Students will find it to their advantage to follow these recommendations in their choice of high school electives so that they may be able to begin their college program at the appropriate level.

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.

Plan B

Persons who have not graduated from high school may be admitted on the basis of satisfactory scores achieved on the General Educational Development (GED) test. UAH is a testing center for the GED program. Anyone seeking additional information or wishing to take the GED examination should get in touch with the Office of Testing Services.

Application Procedure for Freshmen

An application must submit:
1. Completed application forms.
2. Nonrefundable application fee of $15.
3. Completed student medical form.

In addition, he must request that:
4. Two copies of his high school transcript be sent from the high school to the Office of Admissions.
5. (Plan A) ACT test scores be sent from ACT to the Office of Admissions. (Plan B) Official score reports of GED examinations be sent from the agency administering tests to the Office of Admissions if the applicant does not have a high school diploma.
The application for admission must be in the Office of Admissions by the date specified in the UAH calendar.

An individual who has applied under either Plan A or Plan B and who does not qualify as a regular beginning freshman may be admitted to UAH as a special student. The special student will be strongly advised to carry a light course load until he has completed a total of 15 semester hours of work. If a special 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 special student 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 special 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.

Admission of Academically Talented High School Students

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 counselors or personnel in the Office of Admissions.

Admission of 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 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.

Students Transferring within the University of Alabama System

A student enrolled in an undergraduate school or division at either the University of Alabama at Birmingham or the University of Alabama in Tuscaloosa may transfer to an undergraduate division at UAH as long as he is eligible to continue where previously enrolled in the university. Application fee is not required.

Students Transferring from Other Institutions

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 unconditional admission.

An individual who has applied and who does not qualify as a regular transfer student may be admitted on probation as a special student. 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 a special 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.

**Evaluation of Transfer Credit**

For all transfer students who indicate an intention to earn a degree at UAH, transfer credits are evaluated by personnel in the Office of Admissions before or during the first term of enrollment. No credit is accepted for courses passed with grade of D. This policy applies to students entering or re-entering UAH after January 1, 1984; also, the policy applies to coursework taken since January 1, 1984, while concurrently enrolled at UAH. 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 and application of credits are two separate and distinct processes.

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.

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. 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. This regulation applies to courses taken after September 1, 1979. All inquiries concerning applicability of credit should be made to the UAH Engineering Department chairman where the course, or its equivalent, is being 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 School 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 September 1, 1983. All inquiries concerning applicability of transfer credit should be made to the Programs Office, School of Administrative Science, Room 332, Morton Hall, (205) 895-6024.
Application Procedure for Transfer Students

An applicant must submit:

1. Completed application form.
2. Nonrefundable application fee of $15.
3. Completed student medical form.

In addition, he must request that:

4. Two copies of his high school transcript be sent from the high school to the Office of Admissions.
5. Two copies of official transcripts from each collegiate institution attended be sent directly from the previous institution(s) to the Office of Admissions.

The application for admission must be in the Office of Admissions no later than date specified in the UAH calendar.

Admission of Irregular Postgraduate (IPG) Students

An applicant already holding a bachelor's or other higher degree will be considered for admission as an irregular postgraduate.

A student admitted in this category may take any course at the 500 level or below if he has met the prerequisites. In some instances, a student may, with the approval of the department chairman, take courses numbered 600 or above. Credits earned in these courses while a student is classified as an IPG, however, will not carry graduate credit.

A person whose application to the Graduate School has not been approved on the basis of grade-point average, test score or both may apply for admission as an irregular postgraduate. Upon completion of 12 hours or more of advanced-level courses with an average grade of B or better, a student may reapply for admission to the Graduate School. Evaluation of the application will include the demonstrated performance in the advanced-level courses. In this case, an applicant may be admitted provisionally if acceptance is recommended by the appropriate academic department.

Admission of Special Nondegree Students

Any adult who has completed high school or completed the GED with a minimum score of 50 may apply for admission as a special nondegree student. Credits earned or courses audited as a special nondegree 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 special nondegree 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 special nondegree student must satisfy course prerequisites for each course taken.
Application Procedure for Special Nondegree Students

An applicant must submit:
1. Completed application form.
2. Nonrefundable application fee of $15.
3. Completed student medical form.

No transcripts or other credentials are required. A special nondegree student must certify that he is:
1. A high school graduate or has a satisfactory score of 50 or higher on the GED.
2. A student not under current suspension from another collegiate institution.

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.
2. Nonrefundable application fee of $15.
3. Completed student medical form.

In addition, he must request that:
4. Two official copies in English of secondary school and college or university transcripts be forwarded to the University of Alabama in Huntsville directly from the institution(s) attended. Do not send personal copies.
5. American College Test (ACT) scores be 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.)
6. Scores from the Test of English as a Foreign Language (TOEFL) be sent directly to UAH from Educational Testing Service.
7. A certified financial statement be submitted as evidence of sufficient finances to cover his university and personal expenses while attending UAH. In addition, a deposit of $1,500 is required before an applicant will be considered for admission. To make this deposit, have a bank cashier’s check drawn in U.S. dollars for $1,500 made payable to the University of Alabama in Huntsville. Mail this check to the Office of Admissions, the University of Alabama in Huntsville, Huntsville, AL 35899. If an applicant is unable to attend UAH after making the deposit or if admission is denied, the deposit will be returned. The deposit must be maintained at $1,500 until the student completes his studies at UAH. The amount held on deposit by the university will accrue interest.
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.
Individuals in the U.S. on a student visa 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 adviser at their previous school. Transfer students must have completed the equivalent of one academic term at those institutions before admission to UAH.

A graduate applicant must submit:
1. Completed application form.
2. Nonrefundable application fee of $15.
3. Completed student medical form.

In addition, he must request that:
4. Two official copies in English of secondary school and college or university transcripts be forwarded to the University of Alabama in Huntsville directly from the institution(s) attended. Do not send personal copies.
5. Graduate Record Examination (GRE) or Graduate Management Admission Test (GMAT) scores be sent directly to UAH from Educational Testing Service. (See Graduate Admission.)
6. Scores from the Test of English as a Foreign Language (TOEFL) be sent directly to UAH from Educational Testing Service.
7. A certified financial statement be submitted as evidence of sufficient finances to cover his university and personal expenses while attending UAH. In addition, a deposit of $1,500 is required before an applicant will be considered for admission. To make this deposit, have a bank cashier's check drawn in U.S. dollars for $1,500 made payable to the University of Alabama in Huntsville. Mail this check to the Office of Admissions, the University of Alabama in Huntsville, Huntsville, AL 35899. If an applicant is unable to attend UAH after making the deposit or if admission is denied, the deposit will be returned. The deposit must be maintained at $1,500 until the student completes his studies at UAH. The amount held on deposit by the university will accrue interest.
8. Evidence be presented of university-approved health insurance coverage. Proof of continued coverage must be presented by student each term he is enrolled.

Readmission
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 his status and the conditions under which he may resume his studies.

Admission to the Graduate School
See School of Graduate Studies Catalog for detailed information.

Admission to Student and Resident Medical Programs
For information concerning admission to the University of Alabama School of Medicine and to the UAH-Huntsville Hospital Family Practice Residency Program, see section on the School of Primary Medical Care.
Residency

A determination of residency status is made at the time the student is admitted to UAH. In order for a change in residency status to be effective for any given term, such change must be accomplished no later than the first day of classes for that term. For further information, consult the Office of Admissions.
### Financial Information

#### UNDERGRADUATE TUITION

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<th>No.</th>
<th>Hours</th>
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For each semester hour in excess of 12 add $34.00 per term ($68.00) for out-of-state).

**THE ABOVE TOTAL DOES NOT INCLUDE LAB FEES, LATE-REGISTRATION OR CHANGE-OF-COURSE FEES.**

**THE ABOVE TOTAL DOES NOT INCLUDE LAB FEES, LATE-REGISTRATION OR CHANGE-OF-COURSE FEES.**

An estimated average cost of books per term for full-time students is $85.00

*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 regular registration will receive in the mail (see mailing date in calendar in timetable of classes) a schedule of courses, a tuition bill, and an identification card. Tuition charges must 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 will have their registration cancelled, and such students will be required to complete a new set of registration materials during final registration hours.

Tuition will be payable at the time of registration for all who register during periods of final registration.

Charges resulting from dropping, adding, or other charges 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 remission 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. For additional information see Division of Continuing Education in this catalog.

**Other Charges**

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<td>regulations concerning traffic and parking are available at the Campus Safety Office</td>
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Withdrawals and Refunds

After classes have begun, students may withdraw from one or more classes until the end of the sixth week of classes. A student desiring to withdraw from school must complete a withdrawal request form at the Office of Student Records, Room 116, University Center. Date of withdrawal is the date the written request is received at the Office of Student Records. Date of withdrawal will determine the amount refunded. Only course fees, lab fees, building fees and Union fees are refundable.

Date of Withdrawal from School Fees Owed

Withdrawal after registration is completed but before classes begin .................................................. Registration fee $ 5.00
During first two weeks ............................................ 20.00
After first two weeks of class ........................................ 100% of basic fee

Dates of withdrawal from courses which are scheduled on other than a full-term basis will be prorated.

Refund checks will be issued as quickly as they can be processed after the second week of classes.

Students suspended for disciplinary reasons shall have no right to refund of any portion of any fees paid or due to be paid.

School of Nursing

Laboratory Fee (per term)* .............................................. $ 60.00
Liability Insurance (per year)* ........................................ 25.00
Uniforms (junior year) .................................................. approx. 200.00
School of Nursing Pin (graduation) ...................................... variable
Annual health examinations* ................................................ variable
*undergraduate and graduate students

School of Primary Medical Care

General fee (per year) .................................................. $ 2,904.00
Out-of-state residents (per year) ..................................... 11,616.00
UAH student health service fee (per year) .......................... 75.00
Student activity fee (per year) ......................................... 48.00
General building fee (per year) ....................................... 225.00
Medical building fee (per year) ....................................... 102.00
Hospitalization insurance (per year) ................................ variable
Personal liability insurance (per year) ............................... 25.00

*The complete student curriculum for the University of Alabama School of Medicine normally takes 4 years to complete.

Financial Aid

See Student Affairs.
University Housing

For current rate information contact the Housing Office at:
Housing Office
The University of Alabama in Huntsville
Huntsville, Alabama 35899
(205) 895-6108

In addition to rental charges, residents are also responsible for their gas and electricity usage each month. Residents desiring a telephone assume responsibility for proper installation of telephone and payment of all bills.
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 financial aids, the university union, housing, athletics, club sports, student life, auxiliary services, career planning and placement, intramurals, and leadership training.

**Tutoring Services**

Tutoring services are coordinated through the UAH satellite unit of the North Alabama Educational Opportunity Center and the Veterans Educational Assistance Program. All students at UAH are eligible for the EOC Tutorial Program, which is provided at no cost. Students who are eligible for the Veterans Educational assistance Program may be reimbursed for tutoring arranged through the EOC Office. Students desiring to tutor or be tutored may make application with the EOC counselor-coordinator at the EOC Office, Room 118, University Center, or telephone 895-6290.

**Office of Financial Aids**

**Student Aid**

UAH has several programs to assist students in financing their college education. Comprehensive, up-dated information on all financial aid offered through the Office of Financial Aids is available in a booklet published annually by the Division of Student Affairs. 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 Aids.

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 Aids requesting a copy of the financial aids booklet at the time of application to the university. Applications for student aid should be filed at the Office of Financial Aids before the priority deadline, March 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 should be mailed to ACT no later than March 1. The FFS may be obtained from a secondary school or the Office of Financial Aids at UAH.

**Types of Financial Aids**

**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 $1,000. Scholarship applications are available at the Office of Financial Aids. The deadline for receipt of applications is March 1.

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. To be eligible, one must be a full-time student having a grade-point average of at least 2.0.

- **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 recipient must have an overall 3.0 grade-point average and not less than 3.5 average in physics if a physics major or in chemistry if a chemistry major. The scholarship consists of the earned interest or dividends on hand at the time of the scholarship grant and is not to exceed $1,000.

- **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 Carl T. Jones Engineering Scholarship** was established from donations to UAH and the University of Alabama Huntsville Foundation in memory of Carl T. Jones, prominent Huntsville businessman and civic leader. It is awarded annually to two full-time freshman students majoring in engineering and desiring to practice this profession in Alabama.

- **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 recipient must be in good standing with demonstrated need for financial assistance.
The American Institute of Industrial Engineers, Inc., Scholarship-The North Alabama chapter of AIIE provides two tuition scholarships each year for one term. A recipient is selected for fall term and another for spring term. To be eligible, the student must be a full-time undergraduate student who intends to specialize 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 $1,000 scholarship is awarded to a student who demonstrated outstanding leadership ability.

The Felix L. Newman Scholarship was established by a gift from Felix L. Newman, a long-time 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. To be eligible, the recipient must be a full-time student having a grade-point average of not less than 2.0. The scholarship is the amount of the earned interest or dividend on the principal at the time of the granting for one or more scholarships. No scholarship, however, shall exceed $1,000 for any academic year.

The Wernher von Braun Scholarship was created in honor of Dr. von Braun by his numerous friends and awarded annually to a full-time junior or senior. The recipient is selected on the basis of grade-point average, which must be 3.5 or better, contribution to UAH and the community, and potential for leadership.

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 Huntsville Community Chorus Scholarship is a scholarship of $375 awarded each year by the Huntsville Community Chorus Association. To be eligible the student must be a full-time music student in voice, maintain a 2.8 grade-point average, be a regular participant in the Huntsville Community Chorus during the period of the award, and audition before a committee of the music faculty and representatives of the chorus.

The Huntsville Music Study Club Scholarship-The Huntsville Music Study Club, an affiliation of the Alabama Federation of Music Clubs, provides a $150 scholarship each year to a music major. To be eligible, the recipient must be a full-time undergraduate student who has sophomore or higher standing, show evidence of need and academic promise, demonstrate talent and promise (by audition), and be a U.S. citizen.

The University Undergraduate Tuition Scholarship is awarded by individual academic departments to students demonstrating outstanding scholarship. Each scholarship covers the basic tuition, excluding special fees and laboratory fees, for three consecutive terms. To be eligible, the recipient must be a full-time undergraduate student who has completed at least 59 credit hours but no more than 91 credit hours by the end of the term in which he/she is considered a candidate, have an overall grade-point average of 3.0, be pursuing a major in the area for which the scholarship is granted, have on file an approved AOC form and be in good financial standing with the university.

The University Alumni Scholarship-The Alumni Association provides two full scholarships each year to full-time undergraduate students. The recipients are selected on the basis of need, leadership ability, and academic achievement.

The Alabama Society of Professional Engineers is a 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. This fund provides a $200 grant that is awarded during the fall term following the award.

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 Huntsville Foundation also awards several scholarships to junior and senior students throughout the year.

The Chesebrough-Ponds Scholarship is an annual scholarship fund of $4,000 provided by the Chesebrough-Ponds Corporation for the purpose of assisting deserving students.

The Omicron Delta Epsilon Scholarship is awarded annually to a student majoring in economics. The recipient must have and maintain an overall average of 3.0 and have completed 12 hours in economics.

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, nonrenewable 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 School of Nursing. Eligibility is determined by outstanding scholarship and clinical competency as judged by a faculty committee of the School of Nursing. One or more scholarships will be awarded in earned interest or dividends on hand at the time of the granting, but not less than $300.

The UAH Leadership Scholarship-The Division of Student Affairs awards several leadership scholarships to participants in nonathletic teams and organizations such as Forensics, College Bowl, Cheerleaders, and Host-Hostesses. These are one-year, nonrenewable scholarships.

The UAH Academic Scholarship Program-Several full-tuition scholarships are awarded to students of sophomore through graduate status who demonstrate exceptional scholastic ability. Application is through the Office of Financial Aids. The scholarships are renewable based on the cumulative grade-point average.

The Economics Scholarship was established for a junior or senior student majoring in economics with a grade-point average of 3.0. The recipient will be selected by the faculty of the School of Administrative Science.

UAH Honor Scholarship Program-Full-tuition scholarships are awarded to National Merit 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 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. Two full-tuition scholarships are awarded to junior and senior level students pursuing an undergraduate degree at UAH.

**Nicholson Files Scholarship**—Two full-tuition scholarships awarded annually to two Cullman County seniors who have outstanding academic and extracurricular high school records.

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

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

**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**—Two full-tuition scholarships awarded annually to two Decatur, Alabama seniors who have outstanding academic and extracurricular high school records.

**Housing Honor Scholarship**—Several scholarships are awarded annually to exceptional students throughout Alabama to cover the cost of University Housing.

**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**—William R. Gillies Society of Manufacturing Engineers Scholarship—A one year scholarship for $1,000 established by the North Alabama Society of Manufacturing Engineers. The scholarship is awarded annually to a mechanical engineering or industrial and system engineering major who has earned sixty credit hours or more.

**Outstanding High School Senior Scholarship**—Full tuition scholarships awarded to outstanding high school seniors who graduate from high schools in the UAH service area. The scholarships are renewable on a competitive basis.

**Outstanding Junior College Scholarship**—Full tuition scholarships awarded to graduating junior college students in the State.

**Research Park Scholarship**—A four-year full scholarship fund established for an entering freshman who plans to major in engineering. This renewable scholarship is restricted to sons and daughters of employees working in Research Park.

**Dreifus Jewelers Scholarship**—A $500 scholarship fund established by Dreifus Jewelers for a full time undergraduate enrolled in the School of Arts, Humanities, and Social Sciences.

**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 School 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.

Aratex Services, Incorporated—A full tuition scholarship fund established by Aratex Incorporated for a full-time UAH junior enrolled in the School of Administrative Science, majoring in management.

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 School of Arts, Humanities, and Social Sciences.

The Guy and Loretta Spencer Endowed Scholarship—An endowed scholarship fund established to recognize the untiring service of Guy and Loretta Spencer to the University of Alabama in Huntsville. $1000 will be available yearly to a Junior or Senior at the University of Alabama in Huntsville.

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 School 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 UAH School of Nursing. If the recipient is unable to fulfill the obligation, it may be satisfied by his repaying the amount of the scholarship received to UAH Scholarship Fund.

The Alabama legislature in special session in 1977 passed into law fifteen scholarships of $3,800 each for graduate study in nursing. They will be distributed as far as practicable throughout the state. Criteria for the selection of recipients and awarding of scholarships has been established by the Alabama Board of Nursing. Application should be made directly to the Alabama Board of Nursing.

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 National Direct Student Loan Program is available to all students enrolled at least half-time and who have financial need indicated by the Family Financial Statement. An undergraduate may be eligible to borrow a maximum of $6,000 over several years. Graduate or professional students may be eligible to borrow a maximum of $12,000, 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 Guaranteed Loan Program provides federal backing for loans made through private lending agencies such as banks, savings and loans, and credit unions.
A maximum of $2,500 per academic year may be applied for in most states if the educational costs warrant borrowing this much money. Total loans outstanding may not exceed $12,500 for undergraduate or vocational students. The aggregate maximum may be extended to $25,000 for students who borrow for graduate study.

**Nurse Traineeship Program**
This program was established by the Nurse Training Act of 1975 and provides grant assistance to currently licensed professional nurses who wish to enroll full-time in a graduate nursing program. Several full tuition grants are awarded yearly.

**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 Aids.

**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 his/her course of study. Grants may be renewed for the four years of undergraduate work, 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 at an eligible college, university, vocational, or technical school; (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 SAi report to calculate the basic 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 Aids for information regarding eligibility, application, selection, and awards procedures.
Federal Financial Aids Repayment
Federally funded student financial aid (Pell, SEOG, NDSL, FNL) 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 proportion of the indirect aid will be repaid to the respective aid source. Specific regulations governing this policy may be found in Student Financial Aids, a brochure available in the Office of Financial Aids.

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.

Graduate Fellowships and Assistantships
Persons interested in graduate fellowships or assistantships or both should direct their inquiries to the appropriate academic departments.

Career Planning and Placement
The Career Planning and Placement Office is a developmental and educative service which assists students to identify their individual capabilities, interests, skills, and acquired knowledge and to relate these to meaningful vocational options. This service is responsible for communicating career, occupational, and employment information to the University as a whole, and interpreting options available to students within graduate school, business, government, education and non-profit agencies. The culmination of these activities is placement counseling and referral to employers or graduate schools.

The Career Planning and Placement Office offers the following services to all students and alumni: part-time employment referral within the community of Huntsville and surrounding areas; full-time placement referral and on-campus interviews for graduating seniors and alumni; career planning assistance with professional staff; workshops in resume writing skills, interview skills, and job search techniques; use of the DISCOVER computer-assisted guidance system to test interests, abilities, and values and relate these characteristics to 426 occupations; access to a computerized guidance information system with occupational and college information, company literature, salary information and graduate school information; Career Resource Center; and a job fair and a career fair co-sponsored each Spring with the UAH Business Club.

A credential file which includes a resume, transcript and college activities is established for each senior or graduate student who registers with this office. Information in the file is available to employers upon request. Each registered student 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 Career Planning and Placement Office, 212 University Center. Appointments may be made with a Placement staff member by calling 895-6612 between 8:15 a.m. and 5:00 p.m., Monday through Friday.
Cooperative Education Programs

Cooperative Education is a program through which students' academic work is enriched with productive periods of practical experience in business, industry and government. In addition to gaining practical insights into their fields of interests, students enrolled in the program earn sufficient money to pay a substantial portion of their university expenses.

Students participating in the UAH Cooperative Education Program alternate terms of full-time study with terms of full-time career-related work. Work assignments are arranged by the UAH Cooperative Education Office. The work assignments are with leading employers in the area.

There are two levels in the Cooperative Education Program—undergraduate and graduate.

The Undergraduate Program

Any full-time UAH student may participate in the program if the student has a minimum of 16 hours credit, at least 8 of which were earned at UAH, and if he has an overall grade-point average (GPA) of at least 2.5 on all courses attempted at UAH.

The undergraduate Cooperative Education Program is open to all UAH students, regardless of race, color, religion, or sex. Students majoring in all disciplines are potential candidates for the program.

The Graduate Program

This program is limited at present to those students admitted in a degree program as graduate students in science and engineering, administrative science, or English. The Graduate Program is fully covered in the graduate school catalog.

For further information, contact the Director of Cooperative Education, telephone (205) 895-6741.

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.

Medical Services

UAH students who need a family physician may become patients of the UAH Family Practice Center by going to the UAH Ambulatory Care Center 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 students who are planning to become patients of the UAH Family Practice Center are urged to register before they actually need medical care. UAH students who are not already registered patients of the Family Practice Center are eligible for emergency medical care only. Emergency care for UAH students who do not have a doctor is available from 8 a.m. to 8 p.m. Monday through Friday by phoning 536-5511 (8 a.m.-5 p.m.) or 536-5512 (5 p.m.-8 p.m.).

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

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.

Graduate Record Examination Fee Waiver Program

UAH is a corporate institute for the Graduate Record Examination (GRE) Fee Waiver Program. These waivers are limited to senior students receiving financial assistance through the university whose parents’ financial contribution is estimated to be zero for the applicant’s senior year in college.

Information and fee waiver certificates may be obtained in the Office of Financial Aids.

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 Student Records, Room 16, 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.

University Housing

The University of Alabama in Huntsville offers a variety of housing facilities to meet the needs of its diverse student population. The UAH apartment-type housing combines the convenience of living at home with accessibility to the entire campus. The apartments are located within walking distance of classes, the library, the gymnasium with its pool and tennis courts and the University Center. At the same time, the apartments are convenient to supermarkets, drugstores, movie theaters, restaurants and department stores.
Each apartment has its own entrance and is air-conditioned, carpeted and equipped with a stove and refrigerator. All residents have full use of coin operated laundry rooms which are conveniently located within the housing complex. In addition, study lounges and recreation rooms are provided for residents’ educational and social needs.

University Housing is administered by a Director of Housing in the University’s Division of Student Affairs. The Director is aided by Resident Assistants who are assigned to apartment areas and are available to help the residents with academic, maintenance or personal problems. It is the desire of the entire housing staff to assist students in their adjustment to college life and to be of service to all housing residents.

Access to University Housing is a privilege. The University reserves the discretionary right to evaluate each applicant for the purpose of determining eligibility and suitability for residence in University Housing. Any person, married or single, who has been admitted as a student to UAH is eligible for admission to University Housing. A prospective student need not be accepted for admission prior to applying for campus housing. A married couple is eligible if either the husband or wife is or will be a UAH student. If admission to the university is denied, the housing application shall be rejected on grounds of ineligibility and the application deposit will be refunded.

Priority for assignments is based on date of application. The earlier a student submits an application with deposit, the better the chance for requested assignment. Students may request roommates, or the Housing Office will attempt, by screening the applications, to assign roommates who have similar interests and characteristics.

Since University Housing space is limited, students interested in living in campus housing should apply at least one academic term before enrolling at UAH. An application deposit submitted with the completed application form will reserve a place on the waiting list for campus housing. Rental charges are on an academic term basis with rent due when tuition is due. Housing policies and regulations are contained in the Housing Rental Agreement that the residents are required to sign. Housing application forms and additional information may be obtained from the Housing Office, University of Alabama in Huntsville, Huntsville, Alabama 35899 (205)895-6108. Individual and group tours of the apartments may be arranged by appointment through the Housing Office.

Preschool Learning Center

There is an on-campus preschool provided by the University Preschool Parents Association to accommodate the 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

General Information

The new University Center is a welcome addition to the UAH campus. Long awaited, it is a part of the co-curricular educational program of the university and has become 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, dining room, and cafeteria, lounges, a game room, TV viewing rooms, a typing room, an information desk, a computer terminal room, an art gallery, and the University Bookstore.

Additionally, the building houses the offices of the Vice-President for Student Affairs, the Student Government Association, the Exponent, Admissions and Records, Financial Aid, Academic Advisement, Co-op, Career Planning and Placement, Testing Services, and the Bursar.

Information Desk

In addition to having general campus information, the information desk sells a variety of tobacco, candy, and newspapers. 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. 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 and have a large number of plants and windows giving the effect of being out of doors.

Game Room

Located in the lower level of the Center, the game room has pool tables, shuffle board 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. Three TV lounges, with cable TV, are located in the game room.

Meeting Rooms

The Center has 10 meeting rooms designed with 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 operated for the needs and convenience of the UAH community. In addition to providing textbooks and all other items required for all courses taught on campus, the store also sells UAH campus sportswear, study aids, a complete line of Cliff's Notes, gifts, and the most complete line of collegiate school supplies in the city.
At selected times each term, the Bookstore buys back used texts, paying the seller more for each book than any where else in town.

The Bookstore is perhaps best known for featuring the largest selection of technical and reference books in North Alabama. In addition to this wide variety of titles in stock, the store will gladly generate special orders for any book in print as well as for records, class rings, and other jewelry. The Bookstore also sells a complete line of Sperry Personal Computers and accessories.

Student Activities
Located in the University Center, the Student Program Council (SPC) offers a wide variety of films, lectures, dances, concerts, mini-concerts, and dramatic productions. Based on the committee structure, the SPC offers the student body an opportunity to participate in the selection and production of programs as well as the option to just enjoy and/or learn from the programs.

University Foodservice
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.
Activities

**Student Government Association**

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 at UAH is automatically a member of SGA. An executive branch and a sixteen-member legislature are responsible for carrying out the official business of the organization.

The Association sponsors over ninety clubs and organizations across campus in addition to sponsoring many student services such as health insurance, special rates for community cultural events, and a student directory. The S.G.A. provides students with a grievance officer and a telephone information service known as “The Source.” The number for the Source is 895-6666.

**Student Program Council**

The Student Program Council (SPC), funded by and an extension of the S.G.A.A., plans and executes student activity programs for UAH students through its seven activity boards. The purpose behind the SPC is to provide entertainment as well as enhance a student’s cultural, intellectual and social life.

The seven activity boards contained in the SPC are as follows:

**Drama Board**

University Playhouse is a student group administered by the Drama Board. The group’s goal is to produce theatre for and by UAH students. Membership is open to any currently-enrolled student interested in theatre. Each year a broad selection of plays is presented and since 1983 University Playhouse has entered its fall play in the American College Theatre Festival. Recent productions have included *Bedroom Farce, The Bad Seed, The Dining Room*, and *The Diary of Anne Frank.*
Film Series
The Film Series, free to UAH students, shows art, foreign, contemporary, and classic movies weekly. The intent behind the series is to entertain as well as provide the student with a wide cultural background in films and to give him an opportunity to investigate the social and economic importance of film as an art form.

Symposium and Lecture Series
The Symposium and Lecture Series, in bringing a variety of speakers to the campus, serves as an extension of the classroom. At these programs the students, faculty, and staff have opportunities to discuss contemporary matters with authoritative personalities. All students are encouraged to attend the programs and actively participate in the series.

Cabaret Series
UAH Cabaret produces "club type" entertainment for the University community as well as for the city of Huntsville. Show content, in the past, has ranged from mime to bluegrass, from comedy to jazz, from blues to rock-and-roll. All students, faculty, and staff are invited to enjoy the shows.

Concert Series
The UAH Concert Series provides quality entertainment for the UAH community as well as for the city of Huntsville and the surrounding area. Programming varies from major rock-and-roll concerts to Broadway plays. The goal of this committee is to provide quality entertainment to every UAH student.

Special Events Series
The Special Events committee is responsible for planning annual happenings such as Homecoming and Springfest.

Publicity Series
It is the function of the Publicity Director to inform potential audiences of all programs that the other SPC Activity Boards are bringing to campus. Radio, television, and printed materials are all utilized in the effort to publicize SPC programs.

Student Organizations
Alumni Student Council
The purpose of the Alumni Student Council is to act as a representative of the student body and to aid the UAH Alumni Council in its school projects.

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 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 businesses, 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.

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 club, students participate in local projects and programs as well as those of the state and national nursing student’s associations.

Baptist Student Union
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 Holmes Avenue.

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 at random 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 purpose of the Black Student Association is to promote unity and black cultural awareness among students, to foster the needs and interests of minority students of UAH, and to provide charitable services to the community.

Business Club
The Business Club is open to all students interested in business-related careers. The club 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 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 837-2483.
Charger Radio Club

The Charger Radio Club, formerly known as the UAH Amateur Radio Association and founded in the spring of 1973, seeks to promote interest within the university and the community in amateur radio operations and programming. Full membership is open to any university student who possesses an amateur radio license. Associate membership is open to anyone having an interest in amateur radio. The association maintains and operates a station in Room C-5, Research Institute.

Christian Students Organization

This organization was founded to promote spiritual growth and development among college students.

Circle K

Circle K is caring. It is composed of students who wish to become actively involved in community concerns via service projects and activities. Through this collegiate service club, Circle K members express this care by assisting the elderly, the underprivileged, and the UAH campus. Becoming a part of a Circle K Club is an opportunity to commit yourself to enriching the lives of many individuals and, at the same time, enhancing your own life because you’re chosen to care. Sponsored by the Huntsville Metropolitan Kiwanis Club. Weekly meetings.

Collegium Musicum

The purpose of this society is to recognize students’ interests and participation in the field of music and to encourage and support excellence in the musical activities of both the university and the Huntsville communities. Membership is open to all students majoring or minoring in music.

Combat Arts Club

The purpose of the Combat Arts Club is to promote sport competition and excellence in the Martial Arts, while improving health, coordination, and endurance through rigorous exercise.

Compass Club

Criminal Justice Club

The Criminal Justice Club offers students from all disciplines exposure to current social issues, community involvement, and enrichment through university service and participation. The purpose of the club is threefold: to promote community awareness about the administration of justice; to provide services to criminal justice agencies and organizations; and to provide university programs and activities relating to criminal justice which serve the UAH community.

Episcopal Student Fellowship

The primary objective of the Episcopal Student Fellowship is to provide a ministry to any member of the university community who may have need of or desire Christian fellowship or counsel. Membership in ESF is open to any university student.

Frisbee Club

The objectives of the Frisbee Club are to promote the sports of frisbee and hockey sock on the campus through both organized competitive events and social play. The Frisbee Club sponsors frisbee tournaments on both the local and national levels throughout the year.
German Club
The German Club wants to promote 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, related to the above stated goals and for more informal activities at additional times.

History Forum
The History Forum is an informal group whose membership includes all history faculty and interested students from various disciplines. The forum meets monthly on Sunday evenings in faculty homes to discuss a preselected issue of current interest. Programs are jointly presented by faculty members and current volunteers. Dues and profits from fund-raising projects are used to equip the history seminar room at the university.

IEEE (Institute of Electrical and Electronic Engineers)
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 object of this chapter is to promote the profession of industrial and systems engineering through the organized effort of this group in study, research and discussion. Monthly meetings featuring guest speakers, films, or plant tours are presented to acquaint the student body with the ideas, purposes, and objectives of industrial engineering. Membership is open to all full-time undergraduate and graduate students in industrial and systems engineering.

International Student Organization
The International Student Organization was established to promote 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. Auditors and those attending classes on Listener's Licenses are also eligible. Associate membership is open to anyone who believes in the purpose of the organization and wishes to help it obtain its goals.

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 students who are or who have been exposed to the martial arts.
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 of University Advancement.

Madison County Young Republican Club
The purpose of this club is to develop all Young Republicans into an intelligent, dynamic, and cooperative Republican group, to promote in every honorable way the platform and candidates of the Republican party, and to represent the views of young people to the leadership of the party.

Math Club
The purpose of the Math Club is to increase the influence of the university in mathematics, to promote good fellowship, and to offer services to students and faculty in the field of mathematics. The club is open to all students and faculty.
Some of the current activities of the club are furnishing lecturers to speak about mathematical and related topics, providing free tutorial services for mathematics students, aiding in public relations activities of the university, and sponsoring an annual mathematics competition for high school students in the area. The club holds biweekly meetings and occasional social events. Its members are constantly seeking new ways and ideas to promote increased interest in and understanding of mathematics.

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.

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.
The National Society of Black Engineers
The National Society of Black Engineers is dedicated to the development of intensive programs for increasing black and other ethnic minority participation in the field of engineering. These programs are both within and outside the university community and serve to strengthen the relations between local government, industry, and the black and other ethnic communities. Membership is open to all students.

Political Science Club
The purpose of the Political Science Club is to promote interest in politics and policies at the domestic and international levels, and to provide a means for students to meet each other and the PSC faculty. Open to anyone with an interest. The club holds regular business meetings and discussions. Past activities have included lectures, symposiums involving the Huntsville community, and various social events.

Presbyterian Student Fellowship
This organization provides a ministry to any member of the university community. Membership is open to any student interested in study, worship, or counseling in community life.

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.

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 headstart towards becoming a true professional.

Sociology Club
It is the purpose of the Sociology Club to promote interest in social issues, specifically 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. Club membership is open to any member of the University of Alabama in Huntsville community interested in sociology.
Student National Education Association
The UAH chapter of the student NEA 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.

Young Democrats of America (UAH Chapter)

Greeks
Interfraternity Council (IFC)
IFC serves as the governing body of the three fraternities at UAH in order to develop cooperation and coordination of activities among the member fraternities. The three chartered national social fraternities on campus are Alpha Tau Omega, Delta Chi, and Pi Kappa Alpha. 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 three National Panhellenic sororities available to young women at UAH are Chi Omega, Delta Zeta, and Kappa Delta. For more information contact the Panhellenic Advisor at 895-6445.

Academic Honors Societies

Administrative Science Honorary
The Administrative Science Honorary is for students majoring in one of the disciplines of the School 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 average of 3.5 or above, and recommendation by a member of the Administrative Science faculty.

Alpha Epsilon Delta
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
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 Alpha Kappa Delta 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 have completed at least 10 credit hours in sociology, must have at least a general scholastic average of B on all sociology courses, and must be in the upper 35 percent of the class. Election to Alpha Kappa Delta shall be without regard to race, creed, sex, or, national origin. A $12 fee pays for a lifetime membership.
Alpha Lambda Delta
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 Phi Sigma
The purpose of this organization is to recognize and promote high scholarship among students actively engaged in collegiate preparation for professional services; to keep abreast of the advances in scientific research; to elevate the ethical standards of the Criminal Justice professions and to establish in the public mind the benefit and necessity of education and professional training.

Alpha Psi Omega
The Xi Theta cast of Alpha Psi Omega was established at UAH in 1983 and chartered in 1984. Alpha Psi Omega is the national theatre 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 theatre. Membership is earned through work in University-sponsored theatre activities and is open to students of any major.

Beta Beta Beta
The Mu Omega chapter of the national honor society for biology was installed in May 1978. The purpose of the society is to provide recognition for students of the biological sciences who achieve scholastic distinction. The society promotes an interest in and furthers the objectives of science. Active members are undergraduate majors who have completed three courses in biology with a B average.

Eta Kappa Nu
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.

Kappa Pi
The UAH chapter of Kappa Pi, international college art honorary fraternity, is Epsilon Tau. It was installed at UAH in the spring of 1972. Membership is open to junior and senior art majors with above-average academic records and a B average in art courses. Art minors with 15 hours of art courses are also eligible. The chapter sponsors art programs which are open to the community, exhibitions, and projects undertaken jointly with the other chapters.
National Management Association
The student chapter of the National Management Association is an honorary organization offering membership to any student in the School of Administrative Science. Membership requirements are minimum of a 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
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 Epsilon is a member of the Association of College Honor Societies. The UAH chapter was approved in February 1973.

Omicron Delta Kappa
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.

Phi Alpha Theta
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 other 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
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
Phi Sigma Iota is the national Foreign Language Honor Society. It 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. Thus it helps to
maximize the understanding of ourselves and our cultural heritage by understanding others. Numerary 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 should take at least two 300 level courses in foreign languages. Associate membership is open to anyone who believes in the purpose of the honor society and wishes to help it obtain its goals.

Pi Sigma Alpha
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
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
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
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
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 the students and the 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
Sigma Theta Tau is the national 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.

**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.

**UAH Music Ensembles**

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.

**Choral Organizations**

**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 Village Singers**

The Village Singers is a small, elite group of mixed voices which performs madrigals and choral chamber music as well as choreographed tunes and medleys from Broadway and Hollywood. This group was selected for USO overseas tours in 1972 and 1974. Audition with conductor is required. Attendance at rehearsals and performances is also required.

**Summer Chorus**

The Summer Chorus is a group of mixed voices singing a wide variety of popular and serious choral music to satisfy the tastes of all students.

**Music-for-Awhile Ensemble**

Normally offered winter term only in conjunction with the Huntsville Chamber Music Guild, the Music-for-Awhile Ensemble is a solo ensemble specializing in early and contemporary music.

**Instrumental Organizations**

**Chamber Ensembles**

A widely varied group of instrumentalists, preparing literature of the baroque, classic, romantic, and contemporary periods. Each ensemble is coached by a music faculty member. Permission of the Department of Music Chairman is needed.
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.

Summer Band
The Summer Band provides an opportunity to rehearse and perform band music of a somewhat lighter nature. Audition with conductor is 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
The UAH Athletic Department began the 1985 sports year with a concentrated effort toward building a more productive and more progressive overall program. Evidence of that effort became apparent in all of the visible areas almost immediately. Beyond that, there was a new attitude surrounding Charger Athletics, one that reflected a program on the move! That positive attitude about the direction of UAH sports, like the department itself, continues to grow.

UAH currently sponsors intercollegiate athletic programs in men’s and women’s basketball and men’s soccer. Participation in these programs is open to any qualified student. Intercollegiate teams are affiliated with the National Association of Intercollegiate Athletics (NAIA) and the Southern States Conference (SSC).

As a part of the progressive program that has been taken on by the Athletic Department the university plans to become a member institution of the N.C.A.A. Division II by 1986.
Basketball (Men)

In its twelve-year history, the men’s basketball program has become recognized as a perennial powerhouse in its conference as well as nationally. In addition to playing a full Southern States Conference schedule, the Chargers traditionally play rugged non-conference competition that has included such NCAA Division I opponents as Indiana State, Western Kentucky, Tennessee-Chattanooga, and Morehead State. The Chargers have won or shared the conference championship 5 times and have also won the conference tournament 5 times. Playing in what is recognized as one of the most powerful NAIA districts in the country, the Chargers have won the district championship on three occasions, qualifying them for participation in the national tournament. The 1978 team was chosen to represent the United States in two international tournaments played in Brazil. The 1980-81 Charger basketball team finished second in the NAIA National Tournament, losing in overtime.

Basketball (Women)

UAH offered competitive intercollegiate basketball for women beginning with the 1977-78 season. The team is affiliated with the National Association of Intercollegiate Athletics (NAIA) and the Southern States Conference. The Lady Chargers have qualified for the state tournament for 7 consecutive years and won district titles during the 1980-81, 1981-82 and 1982-83 seasons. The 1981-82 Lady Charger team posted a 22-8 record and finished 13th in the NAIA by finishing as runners-up in the Area 5 Tournament. In 1982-83 the ladies finished as NAIA national championship runners-up with a sparkling 27-8 record.

Soccer

In its 12 years of NAIA competition, the UAH soccer team has gained the reputation as one of the nation’s premier teams, competing against soccer powers like Clemson, Alabama A&M, and Quincy College. The team has qualified for NAIA National Tournament competition for 9 consecutive years and on 6 occasions has reached the final eight, finishing second in 1978 and fourth in 1980 and 1981. During the 1977 and 1978 seasons, UAH was chosen to be the host for the NAIA National Tournament. A highlight of the 1980 season was a nationally televised match on ESPN against archrival Alabama A&M University. Over 7,000 spectators plus a national television audience watched UAH (the number-one-ranked team in the NAIA) and Alabama A&M (the number-one-ranked NCAA Division One school) battle to a 2-2 double overtime tie.

Hockey

The UAH Hockey Team was founded in the fall of 1979. During its 6 year existence, the hockey team has experienced phenomenal success, compiling an 134-14-3 record while winning 3 Southern Collegiate Hockey Association (SCHA) championships and two Central States Hockey League titles. Competing against schools like Marquette, Iowa State, University of Illinois, Notre Dame, Air Force and Penn State, the Chargers play all of their home matches in the beautiful 8,000 seat von Braun Civic Center. In each of the last three seasons the Chargers have won the National Club Hockey Championship. In 1982-83 and 1983-84 UAH hosted the national tournament.
Crew

Crew, the oldest sport at UAH, began in 1965. The crew team is a member of the Southern Intercollegiate Rowing Association (SIRA), the National Women’s Rowing Association (NWRA), and the United States Rowing Association (USRA). The men’s and women’s crews compete against schools such as Michigan State University, Notre Dame University, University of Tennessee, University of Minnesota, University of Virginia, and Florida Institute of Technology. The crews participate in several major regattas each year, during both fall and spring quarters, such as the Dust Bowl Regatta in Oklahoma, the Head-of-the-Charles in Boston, and the Governor’s Cup in West Virginia. In the past four years the crews have placed in the top six of over 20 teams in the SIRA Championship, winning the men’s novice eight division in 1980. The 1972-73 men’s lightweight four-oared crew placed first and won the Doc Bradley Trophy of the Dad Vail National Small College Championships in Philadelphia. From 1980-82, UAH crews have consistently placed in the top five at the Dad Vail Championships.

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, racquetball, swimming, table tennis, tennis, and weightlifting.

Spirit Organizations

Chargerette Dance Team

The UAH Chargerette Dance Team is a group of young women who devote a portion of their time and effort to help promote spirit, support the intercollegiate athletics, and represent the University on campus and around the community. Team membership is determined by a panel of judges during tryout sessions each fall and spring. All dance team members must be enrolled as University students during the fall and winter quarters. For more information, contact the Office of the Athletic Director at 895-6144.

Cheerleaders

The UAH Cheering Squad has 10 members. The primary purpose of the cheerleaders is to promote spirit, enthusiasm, and support for intercollege athletics on the campus. Squad membership is determined by a panel of judges during clinic and tryout sessions conducted each fall. All cheerleaders must be students who are currently enrolled as freshmen, sophomores, juniors, or seniors and must maintain a minimum of a 2.0 (C) grade-point average.
Pep Band
The UAH 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.

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.

Axis is an art and literary magazine. Axis is 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 Axis. Anyone wishing to submit art or literature for consideration for the next issue, can bring or mail their work to the Exponent office, Room 103, University Center.

Commencement
The signal event of the student’s academic program is commencement. Twice each year, at the end of the spring and fall terms, the university community conducts a special convocation of scholars, family, and friends to celebrate the completion of degree requirements by our graduates. These academic ceremonies in full regalia also symbolize the institution’s distinctive mission to engage in teaching, research, and public service.
Academic Advisement and Information Center

Academic advising is available to students in the Academic Advisement and Information Center, in advising offices in the Schools of Nursing and Engineering, 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 Schools of Engineering and Nursing. When students declare a major (AOC), they are assigned a faculty adviser in their major department or program. All students are encouraged to maintain contact with their advisers 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 Schools 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 adviser in the AAIC in order to be processed by the Office of Admissions and 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 schools (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 advisers 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 at new-student orientations by the appropriate faculty adviser. Once enrolled at the University, transfer students beyond the freshmen level who are not enrolled in the Schools of
Administrative Science, Engineering and Nursing are advised by the Academic Advisement Center for the first term. During this term, transfer students will declare a major or declare an intention to continue to seek advice in the Advisement Center.

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 school, and the Office of Academic Affairs, in that order.

Students beyond the freshman level enrolled in the School of Administrative Science must have scheduled cards approved each semester by a faculty adviser in that school. For an appointment, call 895-6024.

General Information Center

The General Information Center is located in 124 University Center. The staff maintains current information on academic programs, procedures, and activities of interest to the public and the university community. Interested persons should call 895-6295. Information on admissions, application forms, brochures, testing, and other materials relating to the university are available at the center.

Nondiscrimination Policy

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. Elmer E. Anderson  
Academic Affirmative Action Officer  
123 Madison Hall  
The University of Alabama in Huntsville  
Huntsville, AL 35899 (205-895-6337)

Mr. Kenneth W. Thompson  
Equal Employment Compliance Officer  
131 Madison Hall  
The University of Alabama in Huntsville  
Huntsville, AL 35899 (205-895-6350)
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 personnel 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:

- Director, Admissions and Records
- Director, Academic Advisement and Information Center
- Coordinator of Undergraduate Advisement, Administrative Science
- Programs Coordinator, Administrative Science
- Assistant to Dean, Engineering, Lower Division
- Appropriate Engineering Department Chairman, Upper Division
- and Graduate
- Director, Nursing, Undergraduate Program
- Director, Nursing, Graduate Program
- Director, Continuing Education
- Vice-President, Student Affairs
- Director, Medical Student Affairs
- Director, Financial Aid

A student should make a request concerning his educational records 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 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.

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.

Conduct

A student enrolling in the university assumes an obligation to conduct himself in a manner compatible with the university's role as an educational institution. The administration reserves the right to establish rules for expulsion and penalties for failure to meet standards of scholarship, character, and health.

All members of the UAH community are subject to the provisions of federal and state statutes and local city ordinances with regard to alcoholic beverages, drugs and narcotics, weapons, gambling, fireworks, and the use of state property. Such laws are fully in force on the university campus and may be enforced by public authorities, as well as campus police. Each person associated with the university is responsible for being aware of and abiding by these laws.

The university has incorporated as its own regulations all existing federal, state,
and local laws defining and proscribing criminal. In addition, the following policy applies to the UAH campus community:

1. University policy forbids the possession or consumption of alcoholic beverages by a student anywhere on University property, except in the student’s residence in University housing. In addition, any possession or consumption of alcoholic beverages by a student under 19 years of age, the legal age for drinking established by state law, or any other violation of state or local law with respect to drinking is contrary to established University policy. Activity of this kind may subject a student to both criminal prosecution and campus disciplinary action.

   A student organization should be aware that it may be held responsible for actions of individuals, including non-members, connected with their consumption of alcoholic beverages made available by the organization at its functions. Careful consideration of this potential liability under the law and under University policy should therefore enter into plans to offer such beverages at an activity.

2. Narcotics and other controlled substances will not be permitted anywhere on university property except upon prescription by a practitioner (as that term is defined in the Alabama Uniform Control Substances Act) or except by a practitioner or his authorized agent under his supervision, incident to research, teaching, chemical analysis, or professional practice.

3. Firearms or other weapons (including explosives) are not to be brought onto or kept on UAH property by anyone, whether holding a firearm’s license or not, except police officers and other law enforcement officials in the exercise of their lawful duties.

   Students who violate any of the foregoing laws, regulations, or policies are subject to university disciplinary action as provided in the UAH Student Judicial Code and/or arrest and prosecution by civil authorities as appropriate. Similarly, faculty or staff personnel who violate these laws, regulations, or policies are subject to adverse employment action, including dismissal, and/or arrest and prosecution as appropriate. Suspected violations of the Student Judicial Code should be reported to the Office of the Vice President for Student Affairs.

   Officers in the Office of Campus Security are by statute charged with all the duties and vested with all the power, such as that of arrest, of police officers. Violations of federal, state, or local laws should be promptly reported to the security office and full cooperation given in the discharge of its responsibilities.

**Special Services Program**

A Special Services Program consisting of tutoring, testing, developmental skills, classes, counseling and advising has been developed to assist students who are intellectually able to do college work but who have poor academic preparation for college. All students who are admitted on probationary status or who are having problems with any of their basic introductory or remedial-level courses should make an appointment with the Director of the Special Services Program as soon as possible following registration. There is much greater probability of success if students apply for help from the program before the third week of the term, and students may be refused admission to the program after this time. The Special Services Program is closely coordinated with other university programs such as the Educational Opportunity Center, Academic Advisement and Information Center, Admissions, and Financial Aid. The purpose of the Special Services Program is to help students improve their chance of completing their college education.
Testing Service

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, the English Language Proficiency Test (ELPT), the Calculus Readiness Test (CRT), and the UAH chemistry placement test. 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), and the Alabama Initial Teacher Certification Test.

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.

A student's ACT scores and high school grades determine his placement in English and mathematics. In mathematics the CRT may also be required.

A student desiring to register for Chemistry 121 must (1) be placed in CH 121 from results of the Chemistry Placement exam, or (2) have taken CH 101 or its equivalent.

A student who has had formal training in French, German, or Spanish 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 on level 101.

A student is required to pursue placement procedures only with regard to the aforementioned academic area and conditions. If a student has not received placement recommendations before enrollment, he should contact the Office of Admissions.

The Chemistry Placement Test and residual ACT Placement tests are scheduled once each term (see the UAH calendar). The CRT is scheduled bi-weekly. Students wishing to take these tests should register in the Office of Testing Services at least three days before the tests are to be given. Students will be notified at the time of the exams when they can expect to receive the results of the tests. The charge for the residual ACT is $11. The chemistry placement examination and CRT are free.

Credit by Examination

At UAH a student may obtain up to one-fourth of his degree (32 semester hours) by examination. There are three alternatives by which a student may gain credit through examination at UAH: 1) the Advanced Placement (AP) Program, 2) the College Level Examination Program (CLEP), and 3) departmental examinations. 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) Advanced Placement Program

Several UAH departments will award credit to students who have earned a score of 3 or higher on Advanced Placement (AP) Program examinations of the College Entrance Examination Board. The areas in which credit is presently awarded are biological sciences, chemistry, mathematics, and English. Credit, if awarded, will be recorded without grades or quality points and will not, therefore, be included in calculation of the grade-point average.

2) College Level Examination Program

The College Level Examination Program (CLEP) 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 211 University Center.

2) a. 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 6 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.

2) b. CLEP Subject Examinations

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 quality-point average. The CLEP subject tests and minimum score for credit which will be accepted as substitutes for UAH courses are listed below:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Minimum Score</th>
<th>For</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Government (with essay)</td>
<td>54</td>
<td>PSC 101</td>
</tr>
<tr>
<td>American History I (with essay)</td>
<td>53</td>
<td>HY 221</td>
</tr>
<tr>
<td>American History II (with essay)</td>
<td>53</td>
<td>HY 222</td>
</tr>
<tr>
<td>*Analysis and Interpretation of Literature (with essay) and College Composition (composite score)</td>
<td>60</td>
<td>EH 101, 102</td>
</tr>
<tr>
<td>General Chemistry (take placement exam first)</td>
<td>48</td>
<td>CH 121, 123, 125, 126</td>
</tr>
<tr>
<td>Introductory Accounting</td>
<td>57</td>
<td>AC 211, 212</td>
</tr>
</tbody>
</table>
Introductory Business Law ........................................... BLS 221 57
Introductory Macroeconomics ........................................... EC 142 55
Introductory Microeconomics ........................................... EC 143 55
Introductory Sociology ................................................... SOC 100 54
Western Civilization I (with essay) ................................... HY 101 56
Western Civilization II (with essay) ................................... HY 102 56

*The English Department requires a composite score of 60 on the two examinations, Analysis and Interpretation of Literature (with essay) and the College Compositions, in order to receive 6 hours credit for English 101, 102. Note that no credit is allowed unless both examinations are taken.

If a student does not pass the test(s) no record is placed on his transcript. General examination or subject examinations may be retaken six months after initial testing.

Credit by subject examination is not allowed unless the appropriate academic department has accepted the CLEP test for use by the university.

UAH Credit by Department Examination
Some departments offer credit by examination on tests constructed by the department.
Biological Sciences .................................................... Contact department chairman
Computer Science .......................................................... All 100 and 200 level courses
Mathematics ................................................................. MA 104, 105, 119, 121, 143, 151, 153, 154, 233
Music .......................................................................... MU 101, 102, 103, 110, 201, 202, 311, 312
Nursing .......................................................... Contact Nursing Advisement Office
Philosophy ................................................................. PHL 102, 220
Sociology ................................................................. All courses except 100, 390, and 401
(Contact department chairman)

For further information concerning CLEP, the AP program or Department Examinations contact the Office of Testing Services, Room 211, University Center, telephone 895-6725.

Course Information
The courses to be offered each term will be announced in printed timetables well in advance of the term. There is no assurance that a particular course will be scheduled in any given term or year. Instructor assignments listed in the term schedule are subject to change without notice.

Courses are described under the sections of the various schools.

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>
</tbody>
</table>

66
300-399  Junior (upper level)
400-499  Senior (upper level)
500-599  Advanced undergraduate credit; graduate credit awarded by permission.
600-799  Graduate (IPG and advanced undergraduate students only by special permission.)

### Course Prefix Legend

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Accounting</td>
</tr>
<tr>
<td>AS</td>
<td>Administrative Science</td>
</tr>
<tr>
<td>AMS</td>
<td>American Studies</td>
</tr>
<tr>
<td>ARH</td>
<td>Art History</td>
</tr>
<tr>
<td>AHS</td>
<td>Arts, Hum. &amp; Soc. Sci.</td>
</tr>
<tr>
<td>ARS</td>
<td>Art Studio</td>
</tr>
<tr>
<td>BIB</td>
<td>Bibliography</td>
</tr>
<tr>
<td>BYS</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>BLS</td>
<td>Bus Legal Studies</td>
</tr>
<tr>
<td>CHE</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>CH</td>
<td>Chemistry</td>
</tr>
<tr>
<td>CD</td>
<td>Child Development</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>CM</td>
<td>Communications</td>
</tr>
<tr>
<td>CS</td>
<td>Computer Science</td>
</tr>
<tr>
<td>CJ</td>
<td>Criminal Justice</td>
</tr>
<tr>
<td>DL</td>
<td>Developmental Learning</td>
</tr>
<tr>
<td>EC</td>
<td>Economics</td>
</tr>
<tr>
<td>ED</td>
<td>Education</td>
</tr>
<tr>
<td>ECE</td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>EH</td>
<td>English</td>
</tr>
<tr>
<td>ES</td>
<td>Environmental Science</td>
</tr>
<tr>
<td>FIN</td>
<td>Finance</td>
</tr>
<tr>
<td>FH</td>
<td>French</td>
</tr>
<tr>
<td>GN</td>
<td>German</td>
</tr>
<tr>
<td>HY</td>
<td>History</td>
</tr>
<tr>
<td>ISE</td>
<td>Ind. &amp; Systems Engr</td>
</tr>
<tr>
<td>CM</td>
<td>Journalism</td>
</tr>
<tr>
<td>LI</td>
<td>Linguistics</td>
</tr>
<tr>
<td>MGT</td>
<td>Management</td>
</tr>
<tr>
<td>MKT</td>
<td>Marketing</td>
</tr>
<tr>
<td>MS</td>
<td>Marine Science</td>
</tr>
<tr>
<td>MA</td>
<td>Mathematics</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>MED</td>
<td>Medicine</td>
</tr>
<tr>
<td>MIS</td>
<td>Mgt Info Systems</td>
</tr>
<tr>
<td>MSC</td>
<td>Mgt Science</td>
</tr>
<tr>
<td>ML</td>
<td>Modern Languages</td>
</tr>
<tr>
<td>MU</td>
<td>Music</td>
</tr>
<tr>
<td>MUE</td>
<td>Music Education</td>
</tr>
<tr>
<td>NS</td>
<td>Natural Science</td>
</tr>
<tr>
<td>NUR</td>
<td>Nursing</td>
</tr>
<tr>
<td>PHL</td>
<td>Philosophy</td>
</tr>
</tbody>
</table>
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 Classification</th>
<th>Semester Hours Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>0-29</td>
</tr>
<tr>
<td>Sophomore</td>
<td>30-59</td>
</tr>
<tr>
<td>Junior</td>
<td>60-91</td>
</tr>
<tr>
<td>Senior</td>
<td>92 up</td>
</tr>
</tbody>
</table>

Student Course Loads

A full-time undergraduate student is one who is enrolled in courses totaling at least 8 semester hours a term. 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. (Equivalents will be used for noncredit and audit courses.) A student enrolling for a minimum load each term should not expect to graduate in four years unless he enrolls four terms each 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 great extent should reduce their course load. 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.
A part-time undergraduate student is one who is enrolled in courses totaling one to 7 semester hours.
A full-time graduate student is one who is enrolled in courses totaling 6 to 10 graduate-level semester hours a term.

Orientation
A new student orientation program is held before the beginning of each term. Students accepted for admission will be invited to attend. At orientation students will be introduced to the services and programs of UAH, see an adviser, select courses, and register for classes.

Registration
Dates of early, regular, and late registration are listed in the UAH calendar. Any continuing or returning student eligible to register may take part in early registration. All past financial obligation to the university must be clear before a student may register for courses.
All students in the School of Engineering and the School of Nursing are required to have an adviser’s approval of registration requests. All students above the level of freshman in the School of Administrative Science are required to have adviser’s approval of registration. All freshman students and special students are required to process registration requests through the Academic Advisement and Information Center.
A student who schedules courses during any registration period (early, regular, or late) will have made a financial commitment to the university. If courses are dropped or changed, he 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 Changes
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. (See section on Registration for approval 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 canceled 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 and final registration (see UAH calendar).
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
A student who wishes to withdraw from one or more courses at UAH must obtain a Request for Withdrawal Form from the Office of Student Records. Regardless of a student's reason for withdrawal, he must carry out withdrawal procedures as follows:

1. During the first two weeks of the term, a student may withdraw by submitting the Request for Withdrawal Form to the Office of Student Records. A grade of W is recorded.
2. During the third, fourth, fifth, and sixth weeks of the term, Request for Withdrawal Form must be signed by the student’s adviser (undeclared students see AAIC) and his department chairman (or dean) before being submitted to Office of Student Records. A grade of W or WF will be assigned by each instructor, grades assigned will be based on student’s performance to date of withdrawal. (Note: A grade of WF is calculated in grade point average.)
3. Beginning with the seventh week, a student may withdraw for exceptional circumstances only with the approval of the dean. If the dean approves, a grade of W or WF will be assigned by each instructor, with grades assigned based on student’s performance to date of withdrawal.
4. The Request for Withdrawal Form with all appropriate signatures must be returned to the Office of Student Records. Effective date of withdrawal is the date the form is received in the Office of Student Records. Notification to instructors will be provided by that office.

Repeating a Course
There is no limit on the number of times a student may repeat a course. Each time a course is taken, the hours attempted and the quality points earned will be counted in calculating the student's grade point average. The credit for any course repeated may be counted only once toward graduation.

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 two and one-half hour 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.

Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points per Semester Hour Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Superior</td>
<td>..................................................4</td>
</tr>
<tr>
<td>B-Above average</td>
<td>..................................................3</td>
</tr>
<tr>
<td>C-Average</td>
<td>..................................................2</td>
</tr>
<tr>
<td>D-Passing</td>
<td>..................................................1</td>
</tr>
<tr>
<td>F-Failure</td>
<td>..................................................0</td>
</tr>
<tr>
<td>I-Incomplete.</td>
<td></td>
</tr>
</tbody>
</table>

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.)

A grade of S (satisfactory) or U (unsatisfactory) is assigned in all noncredit courses and in some specified credit courses.

A grade of P (passing) or F (failing) is assigned in some courses. (See Pass-Fail System.)

Change of Grade

A student is permitted a maximum of one calendar year 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 dean of the school concerned.

Student Grade Report
At the completion of each term, a report of final grades is mailed to the address furnished by the student.
A statement of a student’s satisfactory or unsatisfactory academic performance will be provided, upon request, to the individual or agency sponsoring the student’s tuition if the individual or agency submits a statement certifying grade release unless written notification to the contrary is submitted by the student to the Office of Student Records before the final examination period.

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, or S is assigned are not included.

Honors
Honor Scholar
An undergraduate student 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 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 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.

Honors at Graduation
A student graduating at the bachelor’s level with a GPA of 3.20 up to 3.50 will be graduated with honor; a student with a GPA of 3.50 up to 3.80 will be graduated with high honor; a student with a GPA of 3.80-or higher will be graduated with highest honor.
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.
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 readmission.

A student whose academic status is indeterminate because of grades I or X may be permitted to register conditionally. A student with either of these grades should take the necessary steps to remove the incomplete grades within the specified time limits. (See Grades.) At the time such grades are changed to regular letter grades, the appropriate scholastic review will be made and necessary action taken.

Individual schools may have additional requirements specific to their programs. Refer to school sections.

Academic Appeal Process

Academic appeals will originate with the student and will be processed through the student’s major department, the dean of the school, and the Office of Academic Affairs, in that order. Students classified as "special" will be routed through the most appropriate academic dean.
Change of School

Students who are pursuing a program of study in one school or division at UAH and desire to change to a program in another school or division 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.

Declaring a Major

Students will 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 chairman. At that time the complete advising folder will be transferred from the Academic Advisement and Information Center (AAIC) to the relevant dean or department chairman's office for permanent retention. Sophomores who have not declared a major will continue to have their registration cards signed in the AAIC. If students with 45 semester hours are still not prepared to declare their majors, they will declare an intention to continue to seek advice from the AAIC.

Within the same degree a student may elect to complete requirements for more than one major.

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 GPA; a grade of F will be counted in a student's GPA.

A student wishing to exercise a P-F option must make application at the Office of Student Records 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 School of Graduate Studies Catalog.

Reserve Officers Training Corps (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 bulletin. 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.

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.

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, 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 Limits
A student may complete requirements for graduation as specified in the UAH catalog for the year he enters UAH provided he does so within a period of seven years from his original date of entry. If a student does not complete requirements for graduation within the prescribed time, he must change to the then current catalog and meet the requirements as specified. At any time within the seven years that requirements for graduation are changed, a student may elect to be graduated under the new requirements.

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 the individual student; however, he may request an unofficial transcript which does not bear the university seal.
No transcript will be issued for a person who has a financial obligation to the university.

Correspondence Study and Other Nonresident Credit.
Persons interested in taking correspondence study courses through the University of Alabama in Tuscaloosa may write to the College of Continuing Studies, Independent Study Division, University of Alabama, P.O. Box 2967, University, Alabama 35486.
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.

Undergraduate Schools, Majors and Degrees
Detailed information concerning the various degree programs, including course descriptions, is organized according to schools. See the table of contents for the listing of schools.
The undergraduate academic programs of the University of Alabama in Huntsville are administered by five schools with the following approved major programs:

School 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 logistics management and management science.
School of Arts, Humanities and Social Sciences
Areas of study in which majors are currently offered are:
- Art
- Criminal Justice
- Education
- English
- Foreign Language/International Trade
- French
- German
- History
- Other areas with course offerings are American studies, communications, linguistics, philosophy, Russian, Spanish and physical education.

School of Engineering
Areas of study in which majors are currently offered are:
- Chemical Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Industrial and Systems Engineering
- Mechanical Engineering

School 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. Students may select a cognate area in either behavioral science or natural science. Graduates of this first professional degree are qualified to apply for licensure as registered nurses.

School of Science
Areas of study in which majors are currently offered are:
- Biological Sciences
- Chemistry
- Computer Science
- Mathematics
- Mathematics Education
- Physics
- Courses are also offered in environmental science, natural science and statistics.

Degrees Offered
Programs are provided as indicated below for the undergraduate degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Science in Business Administration, Bachelor of Science in Engineering, and Bachelor of Science in Nursing.

Bachelor of Arts—Art, biological sciences, criminal justice, economics, education, English, foreign language/international trade, French, German, history, human growth and development, mathematics, mathematics education, music, music education, political science, psychology, Russian area studies, sociology

Bachelor of Science—Biological sciences, chemistry, computer science, education, mathematics, mathematics education, 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 with cognate option.
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; 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 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 Leading to B.A. and B.S. Degrees

I. General Education Phase

The general education phase provides the foundation for liberal learning and includes writing, literature, history, social science, natural sciences, mathematics, and foreign language. Specific requirements for general education have been identified for each degree. Courses which are included both in general education requirements and also in either the major or minor may be omitted in calculating the maximum of 64 hours which may be required in the area of concentration (AOC).

General Education Requirements for the Bachelor of Arts Degree

<table>
<thead>
<tr>
<th>Humanities and Social Sciences</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English composition</td>
<td>6</td>
</tr>
<tr>
<td>Survey of literature (EH 205-206; 205-241; 205-230; 240-206; 240-230)</td>
<td>6</td>
</tr>
<tr>
<td>Origins and Development of the Contemporary World (HY 101-102)</td>
<td>6</td>
</tr>
<tr>
<td>Economics, political science, philosophy, psychology, or sociology (one discipline)</td>
<td>6</td>
</tr>
<tr>
<td>[If major is political science or psychology, the social sciences requirement must be taken in one of the other disciplines.]</td>
<td></td>
</tr>
<tr>
<td>Foreign language</td>
<td>6-12</td>
</tr>
</tbody>
</table>

(See section entitled Foreign Languages and Literatures.)
Science-Mathematics

Laboratory sciences consist of courses in astronomy, biological sciences, chemistry, natural science, and physics. A combination of natural science and other science courses are not allowed without prior approval from the School of Science.

A student may select any of the following options: (For teacher certification, both biological and physical sciences must be included. See Education Department section for certification requirements.)

a. Mathematics, 6 hours; one laboratory science, 8 hours.
b. Two laboratory sciences, 8 hours each.
c. Mathematics, 3 hours; one laboratory science, 8 hours; another laboratory science, 4 hours.
d. Mathematics, 3 hours; natural science sequence (NS 111, 112, 113), 12 hours.

General Education Requirements for the Bachelor of Science Degree

<table>
<thead>
<tr>
<th>Humanities and Social Sciences</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English composition</td>
<td>6</td>
</tr>
<tr>
<td>Survey of literature (EH 205-206; 205-241; 205-230; 240-206; 240-230)</td>
<td>6</td>
</tr>
<tr>
<td>Origins and Development of the Contemporary World (HY 101-102)</td>
<td>6</td>
</tr>
<tr>
<td>Economics, political science, philosophy, psychology, or sociology (one discipline)</td>
<td>6</td>
</tr>
<tr>
<td>Foreign language</td>
<td>6-12</td>
</tr>
</tbody>
</table>

(See section entitled Foreign Languages and Literatures.)

Science-Mathematics

Two sciences selected from astronomy, biological sciences, chemistry, physics, 8 hours in each .................................................. 16
Mathematics ........................................................................... 9

II. The Area of Concentration (AOC)

The Area of Concentration (AOC) is that part of the student’s undergraduate degree program comprised of the major and minor or major and cognate studies. The upper limit which the university may require in the AOC is 64 hours, with the exception of music and nursing. A student may elect to include additional hours. Courses which are included in both general education requirements and the AOC may be omitted in calculating the 64 hour maximum. No course may be counted more than once in calculating total credits for the major, the minor or cognate studies.

A major is an accumulation of courses designed to give the student depth of competence and understanding of a subject. Its development may be visualized as vertical. Suggested minimum number of hours to constitute a major: 36 (including 15 upper level, with a minimum of 6 upper level at UAH.) Students will not be permitted to transfer courses from the major to electives once the course has been taken. Minimum academic standard required for graduation: (a) C average in all courses in the major discipline taken at UAH; (b) C average in all courses taken in the major discipline, including UAH courses and transfer courses.
A composite major may be developed from courses in more than one discipline. Guidelines for such majors should be identified by the department involved and approved by the Vice President for Academic Affairs. Explicit course programs are subject to approval by all disciplines concerned and must meet minimum standards as set forth above.

Within the same degree a student may elect to complete requirements for more than one major. Such an AOC must receive the approval of each department in which a major is declared.

In support of a major, a student may choose one of two options:

a. A minor is composed of a minimum of 21 semester hours (6 upper level, with a minimum of 6 upper level at UAH) in a single department or program in which the minor is taken. A minimum of 6 hours (usually two courses) must remain to be taken at the time the minor is approved. Its development can be visualized as vertical similar to that of the major, but at less depth. Individual departments or programs establish guidelines for minors from that department or program and any student wishing to exercise this option must have the approval of the chairman of the department or program in which he takes his minor. Students will not be permitted to transfer courses from the minor to electives once the course has been taken. Minimum academic standard required for graduation: (1) C average in all courses in minor discipline taken at UAH; (2) C average in all courses taken in the minor discipline, including UAH courses and transfer courses.

b. Cognate studies is defined as a group of courses in two or more disciplines designed to give the student breadth, relating his major subject to other fields of knowledge. Its development may be visualized as horizontal, and its composition should be based upon (1) interdisciplinary development of one aspect of the major, (2) specifically identified career goals, or (3) a logically defensible relationship for an identified purpose. The minimum number of hours in the cognate studies is 21 (including 9 upper level, with a minimum of 6 upper level at UAH). The selection of courses included in the cognate studies must be approved by the student's major adviser. Students will not be permitted to transfer courses from those listed for cognate studies to electives once the course has been taken. Minimum academic standard required for graduation: (1) C average in all courses listed in the cognate studies option taken at UAH; (2) C average in all courses listed in the cognate studies option, including UAH courses and transfer courses.

At the time the degree is awarded the student’s major(s) will be identified on the transcript. If the program includes a minor, the minor discipline will also be shown; if the cognate studies option is chosen “Cognate Studies” will be shown with no disciplines identified.

The AOC 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 or schools must assume responsibility for ensuring that each of their students has an opportunity to develop an AOC form before the end of the student’s sophomore year. Once the AOC 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.
III. Electives
Electives are courses taken by the student beyond the requirements identified in I and II above. A minimum of 12 hours of electives must be chosen from disciplines not included in the AOC.

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.

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 Area of Concentration 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, 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 and Communication Arts, 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.

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

1. Two academic years of English
2. One and one-half academic years of general biology or zoology plus electives
3. One academic year of general inorganic chemistry (including qualitative analysis and laboratory work)
4. One academic year of organic chemistry with laboratory work
5. One academic year of physics with laboratory
6. College algebra and calculus

In addition many medical schools require that students take one year of physical chemistry. Students are encouraged to take as broad a curriculum as possible. To reduce duplication in later work, genetics, cellular and developmental biology, and cellular physiology are recommended as electives in life sciences. 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 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:

1. Biological sciences ............................................................... 8
2. Inorganic chemistry (including qualitative analysis) .................... 8
3. Organic chemistry ............................................................... 8
4. Quantitative analysis ............................................................. 4
5. Physics (including laboratory) .................................................. 8
6. College algebra and trigonometry ............................................. 6
7. 30 semester hours of nonscience courses to include 6
   (preferably 12) semester hours in English. It is recommended that students complete 12 semester hours in a foreign language and include as many courses in history, political science, economics, philosophy, psychology, and sociology as possible ......................................................... 30

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8. The completion of a minimum of 90 semester hours of collegiate work.

Students should elect courses in mathematics through calculus and should not elect biological sciences courses that constitute a part of the dental school curriculum. Students interested in preprofessional health programs (predentistry, premedicine, preoptometry, preveterinarian medicine) are encouraged to contact the professional adviser by calling the Office of the Dean, School of Science.

Medical Technology

A bachelor's degree program with emphasis in premedical technology is available through the Biological Sciences Department (Curriculum VIII). This curriculum is designed to satisfy prerequisite requirements for acceptance into a clinical training program in medical technology.

Education—Teaching Certificates

A student may complete professional requirements for a Class B Elementary, Middle or High School Professional Teaching Certificate in any of the approved major areas of concentration, a Class B Elementary-Secondary Professional Certificate in Art or Music, and a Class A Special Education Professional Certificate with an endorsement in learning disabilities, early childhood education for the handicapped, and school psychology. Class A Professional Certificates are also available in biological sciences, chemistry, English, history, mathematics, and physics. Students interested in a degree in education involving programs in other major areas may complete much of the course work at UAH. When preparing such programs, a student should consult the requirements of the particular school to which he may transfer.

Environmental Science Certificate Program

A student may elect to follow a program of environmental science courses leading to a Certificate in Environmental Science. A fully prepared student can earn the certificate while competing the requirements for the bachelor's degree in mathematics, science, or engineering without any additional hours. The program includes basic science courses, most of which would normally be included in the curriculum; a core of four courses in ecology, climatology and meteorology, geology, and hydrology, and pollution problems; and any two of several advanced environmental science and engineering courses. In completing the program, the student also satisfies the requirements for an undergraduate minor in environmental science.
School of Administrative Science

Dean C. David Billings, B.S., Ph.D., Professor of Finance

Accounting and Business Legal Studies

Professor Lindbeck; Associate Professor Bryson (Director); Assistant Professors Cates, Elmore, Rezaee; Adjunct Assistant Professors Fohrell, Hicks, Swann; Instructors Haynes, Price, Whitten

Economics and Finance

Professors Billings, Bond (Director); Associate Professors Banton, Paul; Assistant Professors Schoening, Schroeder, Scriven, Tan; Instructor Gord

Management and Marketing

University Professor Graves; Adjunct Professor Lundquist; Associate Professors McCollum, Olsen, G. Vozikis; Adjunct Associate Professor B. Davis; Assistant Professors Busbin, Sherman (Director); Instructors Asherbranner, Kier, Rumford, C. Vozikis

Management Information Systems and Management Science

Associate Professor Stafford; Assistant Professors Floyd, Goss, McKenney, Rees, Tseng; Adjunct Assistant Professor Thompson; Instructors Kirsch, Krishnasami

Objectives

The School of Administrative Science is a professional school which seeks to accomplish three major objectives in serving the educational, research and service needs of regional public and private organizations; those 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 conduct productive applied research which furthers the accumulated knowledge of the operation of complex organizations and serves the needs of the local and regional business and public organizations;

3. to render public service to business, industry and government in the region.

These objectives are pursued in an environment increasingly oriented toward the application of advanced technology in the administration and operation of organizations. A basic premise of the School's mission is that the increasing influence and importance of complex organizations in today's society require the development of competent and creative administrators.

To prepare students for the challenges of the future, the School's programs provide 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 School 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 and 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, marketing, or procurement management.

At the graduate level, the School of Administrative Science offers a Master of Administrative Science degree program as well as a cooperative Doctor of Philosophy in Business Administration degree program with the University of Alabama in Tuscaloosa. The Master of Administrative Science is a generic management degree designed to provide entry level and mid-career managers with the practical and theoretical knowledge necessary to perform management tasks in public and private organizations. The cooperative Ph.D. program leads to careers in government, business, research, or academia. For more information refer to the UAH Graduate Catalog.

Memberships

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

The School is a member of the National Association of Management and Technical Assistance Centers which is a non-profit association of management and technical assistance centers devoted to marshalling the resources of institutions of higher education to accelerate the economic development process.

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Center for High Technology Management and Economic Research

The staff of the Center analyzes the business and economic environment of the Huntsville area, the state of Alabama, and the Southeast region of the United States. Special emphasis is on businesses in technological fields. The Center is an associate member of the Association for University Business and Economic Research, a member of the Southern Technology Applications Center, and a member of the NASA Technology Transfer Network.

The Center serves the business community, state and local governments, individuals, and the University through management and technical assistance, dissemination of economic and socioeconomic information, and support for faculty in seeking funding for research projects. The Center publishes the results of its research as monographs so that significant developments in business and economics can achieve wide exposure.

In addition, the Center staff does contract research on business and economic problems for governmental organizations and private industry. A major subsidiary program is the Alabama High Technology Assistance Center (AHTAC), which offers technical and management assistance to new and emerging high technology businesses throughout Alabama. Using technical experts from within the University and from such sources as the Federal Laboratory Consortium and the NASA Technology Transfer Network, AHTAC supplies idea and product evaluation and technical problem resolution. AHTAC regularly sponsors seminars and workshops on subjects of special interest to the “high tech” community.

Another subsidiary program is the Small Business Development Center (SBDC), which gives managerial and technical assistance to entrepreneurial ventures in north Alabama. The SBDC advises potential and established entrepreneurs, assists in the development of private-sector jobs, and advocates the free enterprise system.

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 School 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.

Degrees Offered

The School of Administrative Science offers two undergraduate degrees, the Bachelor of Science in Business Administration (BSBA) and the Bachelor of Arts (BA) in economics. The BSBA encompasses majors in accounting, economics, finance, management, management information systems, marketing, and procurement management.

The School’s Graduate Program in Administrative Science offers a Master of Administrative Science (MAS) for qualified students desiring advanced work in management. This program encompasses specializations in computer science, economics, educational administration, operations research, personnel and human resource management, product management, public administration, and systems efficiency analysis (project management).
Highly qualified students enrolled in the BSBA undergraduate program of the School 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. BSBA seniors who are interested in obtaining an MAS degree should contact the School’s Graduate Programs Coordinator in Room 332 Morton Hall.

Student Advisement and Enrollment

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

First year students and newly enrolled transfer students are required to plan their course selection with an adviser in the AAIC. After completing the first year of studies (30 semester hours), or a transfer student’s first term, students seeking a BSBA are advised by the School of Administrative Science’s Coordinator of Undergraduate Advisement in the School’s Program office (telephone 895-6024). The Programs Office is a student’s contact point for information concerning possible majors, declaring a major, transfer credit, and degree requirements. After declaring a major the student will be advised by a faculty member in the student’s major discipline.

The School’s Graduate Programs Coordinator, in conjunction with members of the School’s graduate faculty, is responsible for advising all Administrative Science graduate students.

All School of Administrative Science students, graduate and undergraduate, must have class registration cards approved by one of the advisement personnel mentioned previously. Registration cards and drop/add slips will not be processed without the appropriate approval. Each student is responsible for registering for all required courses in their proper sequence and for fulfilling all requirements for admission and graduation.

Transfer Students

In addition to complying with the university policy for the admission of transfer students (see the Admissions Information section) a prospective transfer student seeking a BSBA or BA degree should seek advice from the School’s Coordinator of Undergraduate Advisement at least one month before registering. Students whose transcripts are received in time for evaluation by the Office of Admissions and Records before the beginning of the term will receive a copy indicating the accepted transfer credits.

The specific credit for work done at other institutions which will apply toward the BSBA or BA degree is determined by the School’s Coordinator of Undergraduate 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 School’s Coordinator of Undergraduate Advisement.

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 School’s Coordinator of Undergraduate Advisement.
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 completion of an upper level class in the same area with a grade of “C” or better or by passing a validation examination.

Residency 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 420 Business Policy. Students who are required to take additional courses within the School of Administrative Science in order to meet the residency requirement may be required to complete more than 128 semester hours in order to graduate.

Bachelor of Science in Business Administration
Degree Requirement
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, major, and a choice of elective courses. Each student must meet the following degree requirements established by the University and the faculty of the School of Administrative Science to be awarded a BSBA:

1. Complete a minimum of 128 semester hours of work with a minimum of 39 semester hours in courses numbered 300 and above;
2. Attain a minimum grade point average of 2.0 (C) in all course work attempted;
3. Attain a minimum grade point average of 2.0 (C) in the Business Administration Core Curriculum (39 hours).
4. Attain a minimum grade point average of 2.0 (C) in the major.
5. Complete the business policy course with a minimum grade of “C”; and
6. Comply with University and School of Administrative Science residency requirements.

Lower Division Requirements: 61-66 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 18 semester hours of work in the pre-business administration core curriculum. Specific courses in the GER and the pre-business administration core curriculum are as follows:
<table>
<thead>
<tr>
<th>I. General Education Requirements</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Humanities and Fine Arts</td>
<td></td>
</tr>
<tr>
<td>a. English Composition EH 101-102</td>
<td>6</td>
</tr>
<tr>
<td>b. Twelve hours selected from history, literature, art, communication (not CM 113), foreign language, philosophy or music. Six hours must be taken in either history or literature. A maximum of 6 hours may be taken in any one discipline</td>
<td>12</td>
</tr>
<tr>
<td>2. Communication</td>
<td></td>
</tr>
<tr>
<td>Basic Speech Communication CM 113</td>
<td>3</td>
</tr>
<tr>
<td>3. Library Research</td>
<td></td>
</tr>
<tr>
<td>BIB 230</td>
<td>1</td>
</tr>
<tr>
<td>4. Social and Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>Twelve hours selected from the following fields with a maximum of 6 hours in one discipline: political science, psychology, or sociology</td>
<td>12</td>
</tr>
<tr>
<td>5. Natural and Physical Sciences</td>
<td></td>
</tr>
<tr>
<td>Six to eight hours from the following fields: astronomy, biological sciences, chemistry, natural science, or physics</td>
<td>6-8</td>
</tr>
<tr>
<td>6. Mathematics* (demonstrated competency through MA 151 or 153)</td>
<td></td>
</tr>
<tr>
<td>One of the following options:</td>
<td></td>
</tr>
<tr>
<td>a. MA 143 Finite Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MA 151 Survey of Elementary Calculus</td>
<td>3</td>
</tr>
<tr>
<td>b. MA 121 Precalculus II</td>
<td>3</td>
</tr>
<tr>
<td>MA 151 Survey of Elementary Calculus</td>
<td>3</td>
</tr>
<tr>
<td>c. Level III placement and</td>
<td></td>
</tr>
<tr>
<td>MA 151 Survey of Elementary Calculus</td>
<td>3</td>
</tr>
<tr>
<td>d. Level III placement and</td>
<td></td>
</tr>
<tr>
<td>MA 153 Calculus and Analytical Geometry</td>
<td>3</td>
</tr>
<tr>
<td>e. MA 121 Precalculus II</td>
<td>3</td>
</tr>
<tr>
<td>MA 153 Calculus and Analytical Geometry</td>
<td>3</td>
</tr>
<tr>
<td>Total General Education Requirements</td>
<td>43-48</td>
</tr>
</tbody>
</table>

*Each BSBA major will be given a mathematics placement level when he/she enters UAH. The placement levels and appropriate courses are:
- Remedial: MA 004 or MA 033;
- Level I: MA 119 or MA 105;
- Level II: MA 121 or MA 143; or
- Level III: MA 153 or MA 151.

Prerequisite mathematics course below Level II will not count toward the 128 semester hours requirement for the BSBA degree. If a student plans to (a) emphasize quantitative methods in his program, or (b) minor in an area which will require at least two courses of the calculus sequence, or (c) attend graduate
school, then he/she should choose his/her mathematics course from the sequence MA 119, 121, 153, 154, 233, 244, 251, beginning with the course indicated by his/her placement level. At a minimum, work should be continued through MA 154. If a student’s plans do not require training past a minimum proficiency level, then mathematics course should be chosen from the sequence MA 105, 143, 151, 244, ST 281, beginning with the course indicated by the student’s placement level.

II. Pre-Business Administration Core Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC 142</td>
<td>Principles of Economics I (Macroeconomics)</td>
<td>3</td>
</tr>
<tr>
<td>EC 143</td>
<td>Principles of Economics II (Microeconomics)</td>
<td>3</td>
</tr>
<tr>
<td>MIS 201</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MSC 287</td>
<td>Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AC 211</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>AC 221</td>
<td>Accounting Lab I</td>
<td>0</td>
</tr>
<tr>
<td>AC 212</td>
<td>Principles of Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>AC 222</td>
<td>Accounting Lab II</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Pre-Business Core Curriculum ............................................. 18

Upper Division Requirements: 62-67 Semester Hours

The structure of the degree program is such that a student normally will complete 61 to 66 semester hours of lower division requirements before entering the upper division School of Administrative Science courses. Specific requirements for admission into junior level School of Administrative Science courses are:

1. Successful completion of all pre-business administration core curriculum courses;
2. Successful completion of the mathematics, English composition, communication and library research ** requirements;
3. A minimum grade of "C" in both English composition courses;
4. Completion of a minimum of 60 semester hours of course work, and
5. Admission to UAH as a regular student.

**Transfer students who have met all requirements except library research, may enroll in library research and junior level courses concurrently their first term at UAH.

Upper division course requirements are as follows:

1. Junior/Senior Business Administration Core Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 301</td>
<td>Principles of Finance</td>
<td>3</td>
</tr>
<tr>
<td>MGT 301</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 301</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MSC 385</td>
<td>Production/Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 420</td>
<td>Business Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

Social, Legal and Ethical Environment of Business requirement. See individual major ............................................. 3

International Business requirement. See individual majors ............................................. 3

21
2. EH 300 Strategies of Business Writing ..................................................3
3. Major .............................................................................................24
4. BSBA degree program may also include an appropriate minor. This may require the student to complete more than 128 hours ...........................................................................(21)
5. Non-Administrative Science electives* must be selected from courses outside the School of Administrative Science ..................................................15
6. Free Electives* may be selected from any School within the University ....0-4
Total Upper Division Requirements .......................................................63-67
Total minimum degree requirements ..................................................128

*Students entering with appropriate mathematics preparation (Level III placement) may complete a BSBA in 128 semester hours with up to four hours of free electives. No more than 6 hours of HPE activity and music ensemble courses may count toward graduation.

**Majors in the BSBA Degree  
Accounting**

The major in accounting includes an instructional program emphasizing the principles, theories, and procedures of organizing, maintaining, and auditing business and financial transactions. It is intended to prepare students for careers in the following areas: (1) public accounting; (2) management accounting as cost accountants or controllers; and (3) governmental accounting at the federal, state, and local levels. The program also provides an excellent foundation for graduate study in law and management and for other careers. All accounting courses required for the BSBA with a major in accounting must be completed in not more than seven years. Credit for individual undergraduate accounting courses taken more than seven years but less than ten years before completion of all requirements for the degree may be validated by a special departmental examination. Such an examination is the equivalent to a comprehensive final examination for the course. A student may take such an examination to validate a particular course only one time.

Students pursuing a BSBA degree with a major in accounting must meet the following requirements:

Social, Legal, and Ethical Environment of Business requirement is met by completing BLS 211 or MGT 430.

International Business Requirement is satisfied by completing AC415 and other required accounting courses.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 301</td>
<td>Managerial Accounting</td>
</tr>
<tr>
<td>AC 310</td>
<td>Intermediate Accounting I</td>
</tr>
<tr>
<td>AC 311</td>
<td>Intermediate Accounting II</td>
</tr>
<tr>
<td>AC 312</td>
<td>Intermediate Accounting III</td>
</tr>
<tr>
<td>AC 313</td>
<td>Income Tax Accounting I</td>
</tr>
<tr>
<td>AC 314</td>
<td>Cost Accounting</td>
</tr>
</tbody>
</table>
AC 431 Auditing I .............................................................................. 3
Three hours from the following: 3
BLS 221 Business Law I ................................................................. 3
AC 323 Income Tax Accounting II .................................................. 3
AC 425 Advanced Financial Accounting II ..................................... 3
AC 432 Auditing II ......................................................................... 3
AC 442 Internal and Operational Auditing ...................................... 3
AC 470 Seminar in Contemporary Issues of Accounting ............... 3

The accounting faculty recommends that any available free electives be chosen from offerings in accounting and business law. Students preparing for professional certification examinations, such as the Uniform Certified Public Accountant (C.P.A.), the Certificate in Management Accounting (C.M.A.), and the Certified Internal Auditor (C.I.A.), will need to complete courses beyond the minimum requirements for the BSBA degree. Students interested in additional information concerning preparing for one or more of these examinations should contact the School's Director of Accounting and Business Legal Studies (895-6159).

Economics
The undergraduate curriculum in economics offers the student two curricula of study. One is the liberal arts curriculum which leads to the BA degree. (See section on Bachelor of Arts in Economics Degree Requirements). The other is the applied economics curriculum that leads to the BSBA degree with a major in economics. Both curricula require the student to have a thorough grounding in economic theory.

The BSBA curriculum emphasizes the applied aspects of economic analysis and describes the principles and methods for organizing a business firm and for combining resources to produce goods and services, taking account of costs, profits, and the nature and extent of competition in markets. This provides the student with a solid foundation for careers in business, government, and industry. This avenue of study is especially valuable when taken in relation to options in accounting, management, marketing, industrial and systems engineering, computer science, and related fields. This educational experience is appropriate for possible careers in banking, market forecasting, and business data and economic data analysis. The program also provides excellent preparation for students interested in pursuing graduate study in business, economics, and other applied fields.

Students pursuing a BSBA with a major in economics must meet the following requirements:

Social, Legal, and Ethical Environment of Business requirement is satisfied by completing BLS 211 or MGT 430.

International Business requirement is satisfied by completing any one of the following courses: EC 446, FIN 454, MGT 450, or MKT 415.

93
### Semester Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC 310</td>
<td>Introduction to the Use of Mathematics in</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Economics and Business</td>
<td></td>
</tr>
<tr>
<td>EC 325</td>
<td>Intermediate Economics and Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>EC 430</td>
<td>Introduction to Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>EC 340</td>
<td>Macroeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EC 345</td>
<td>Microeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EC 341</td>
<td>History of American Economic Growth</td>
<td>3</td>
</tr>
<tr>
<td>EC 448</td>
<td>Development of Economic Theory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Three hours from the following:</td>
<td></td>
</tr>
<tr>
<td>EC 322</td>
<td>Public Policy Toward Business</td>
<td>3</td>
</tr>
<tr>
<td>EC 352</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>EC 485</td>
<td>Comparative Economic Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

**Finance**

The major in finance program describes the financial management of industrial and commercial enterprises; of commercial and mortgage banking; of insurance companies and real estate firms; and of investment analysis and portfolio selection. This includes a study of the securities market, investment concepts, stocks, mutual funds, bonds, securities, the effects of economic business cycles on investments and yields, and the theories and techniques of buying, selling, renting and managing real property. This prepares students for careers in financial management in business and non-profit organizations.

Social, Legal, and Ethical Environment of Business requirement is satisfied by completing BLS 211 or MGT 430.

International business requirement is satisfied by completing AC 450, EC 446, FIN 454, MGT 450, or MKT 415.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 352</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>FIN 362</td>
<td>Security Analysis &amp; Portfolio Management</td>
<td>3</td>
</tr>
<tr>
<td>FIN 430</td>
<td>Real Estate Finance</td>
<td>3</td>
</tr>
<tr>
<td>FIN 431</td>
<td>Managerial Finance &amp; Policy Determination</td>
<td>3</td>
</tr>
<tr>
<td>FIN 470</td>
<td>Seminar in Finance</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Nine hours from the following:</td>
<td></td>
</tr>
<tr>
<td>MSC 325</td>
<td>Intermediate Economic &amp; Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>EC 340</td>
<td>Macroeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EC 345</td>
<td>Microeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>FIN 420</td>
<td>Principles of Risk &amp; Insurance</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>a course approved by the adviser</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

**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. There are two tracks in the manage-
ment curriculum. The first is the Human Resource Management program. This program focuses on personnel administration, organizational behavior, and labor relations. The second program is the Product Management program. This program focuses on production planning and control, materials management, quality control, and manufacturing processes.

Students pursuing a BSBA with a major in management must meet the following requirements:

Social, Legal, and Ethical Environment of Business requirement is satisfied by completing MGT 430 or BLS 211.

International Business requirement is satisfied by completing any one of the following: EC 446, FIN 454, MGT 450*, MKT 415.

### Human Resource Management Program:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 361</td>
<td>Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MGT 362</td>
<td>Management and Labor Relations</td>
<td>3</td>
</tr>
<tr>
<td>MGT 363</td>
<td>Personnel: Human Resources Management</td>
<td>3</td>
</tr>
<tr>
<td>AC 301</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BLS 310</td>
<td>Labor Law</td>
<td>3</td>
</tr>
<tr>
<td>MSC 386</td>
<td>Advanced Production/Operations Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Six hours from the following: .......................................................... 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS 301</td>
<td>Information Systems in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>MIS 400</td>
<td>Decision Support Systems</td>
<td>3</td>
</tr>
<tr>
<td>MSC 325</td>
<td>Intermediate Econ &amp; Bus Statistics</td>
<td>3</td>
</tr>
<tr>
<td>PR 301</td>
<td>Introduction to Procurement</td>
<td>3</td>
</tr>
</tbody>
</table>

Any Management elective .......................................................... 3

**24**

*Students who take MGT 450 to satisfy the International Business requirement cannot use this as a management elective course.

### Product Management Program:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC 325</td>
<td>Intermediate Economic &amp; Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MSC 386</td>
<td>Advanced Production/Operations Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>MSC 401</td>
<td>Production Planning and Control</td>
<td>3</td>
</tr>
<tr>
<td>MSC 402</td>
<td>Materials Management</td>
<td>3</td>
</tr>
<tr>
<td>ISE 378</td>
<td>Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>AC 301</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
</tbody>
</table>

Six hours from the following: .......................................................... 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC 430</td>
<td>Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>ISE 423</td>
<td>Statistical Quality Control</td>
<td>3</td>
</tr>
<tr>
<td>ISE 430</td>
<td>Modern Manufacturing/Production Systems</td>
<td>3</td>
</tr>
<tr>
<td>MSC 395</td>
<td>Sampling in the Business Environment</td>
<td>3</td>
</tr>
<tr>
<td>MSC 470</td>
<td>Seminar in Production Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**24**
The product management program is designed to assist individuals preparing for professional certification examination by the American Production and Inventory Control Society (APICS). Individuals interested in additional information should contact the school’s Director of Management and Marketing (895-6680).

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.

Students pursuing a BSBA with a major in marketing must meet the following requirements:

Social, Legal, and Ethical Environment of Business requirement is satisfied by completing MGT 430 or BLS 211.

International Business requirement is satisfied by completing any one of the following: EC 446, FIN 454, MGT 450, MKT 415*

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC 325 Intermediate Econ &amp; Business Statistics</td>
</tr>
<tr>
<td>MKT 332 Consumer Behavior</td>
</tr>
<tr>
<td>MKT 343 Marketing Research Design</td>
</tr>
<tr>
<td>MKT 344 Marketing Research Applications</td>
</tr>
<tr>
<td>MKT 414 New Product Development or MKT 470 Seminar in Marketing</td>
</tr>
<tr>
<td>MKT 480 Marketing Management</td>
</tr>
<tr>
<td>Six hours of Marketing electives</td>
</tr>
</tbody>
</table>

*Students who take MKT 415 to satisfy the International Business requirement can not use this as a marketing elective course.

Procurement Management

The major in procurement management 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.

Students pursuing a BSBA with a major in procurement management must meet the following requirements:
Social, Legal, and Ethical Environment of Business requirement is satisfied by completing BLS 211.

International Business requirement is satisfied by completing any one of the following: EC 446, FIN 454, MGT 450, MKT 415.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR 301</td>
<td>Introduction to Procurement</td>
<td>3</td>
</tr>
<tr>
<td>PR 302</td>
<td>Contract Administration</td>
<td>3</td>
</tr>
<tr>
<td>PR 303</td>
<td>Cost and Price Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PR 404</td>
<td>Negotiation Techniques</td>
<td>3</td>
</tr>
<tr>
<td>PR 405</td>
<td>Government Contract Law</td>
<td>3</td>
</tr>
</tbody>
</table>

Nine hours of Administrative Science electives approved by advisor: 9

24

Management Information Systems

A student may pursue a composite major in management information systems. This major is designed for students who want to become developers of information systems that utilize computers in a business or administrative environment. Management information systems subject matter includes the hardware, software, procedures, and human resources that comprise computer-based information systems and the business or administrative context within which computer systems are applied. This major involves a combination of disciplines in the School of Administrative Science and the School of Science. The Management Information Systems curriculum differs from the Computer Science curriculum in the environment in which the program is taught, the employment environment for the graduate, and the depth of technical expertise required.

a. The management information systems curriculum teaches information system concepts and processes within the two contexts of organization functions and management knowledge 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 the ability to develop a management information systems structure for an organization and to design and implement applications. There is less emphasis on skills and hardware and software design. The computer science graduate typically has less exposure to management information requirements analysis and organizational considerations but obtains greater expertise in algorithm development, programming, system software and hardware.
Students pursuing a BSBA degree with a composite major in management information systems must meet the following requirements:

Social, Legal, and Ethical Environment of Business requirement is satisfied by completing BLS 211 or MGT 430.

International Business requirement is satisfied by completing any one of the following: AC 450, EC 446, FIN 454, MGT 450, MKT 415.

The student completes either the Technical Emphasis Program or the Administrative Emphasis Program.

Technical Emphasis Program:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 113</td>
<td>Computer Programming</td>
<td>3</td>
</tr>
<tr>
<td>CS 208</td>
<td>Computer Organization and Advanced Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CS 308</td>
<td>Computer Organization and Advanced Programming II</td>
<td>3</td>
</tr>
<tr>
<td>MIS 311</td>
<td>Computer Applications in Economics and Business I</td>
<td>3</td>
</tr>
<tr>
<td>AC 307</td>
<td>Accounting Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MIS 411</td>
<td>Computer Applications in Economics and Business II</td>
<td>3</td>
</tr>
<tr>
<td>MIS 412</td>
<td>Information Systems Design and Implementation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Three hours of electives approved by advisor</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

Administrative Emphasis Program:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS 211</td>
<td>Introduction to Computers in Business</td>
<td>3</td>
</tr>
<tr>
<td>AC 301</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>MIS 301</td>
<td>Information Systems in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>AC 307</td>
<td>Accounting Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MIS 340</td>
<td>Data Bases for Management</td>
<td>3</td>
</tr>
<tr>
<td>MIS 412</td>
<td>Information Systems Design &amp; Implementation</td>
<td>3</td>
</tr>
<tr>
<td>MIS 470</td>
<td>Computer Applications in Economics &amp; Business II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Three hours of electives approved by advisor</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

Suggested Schedule of Courses for Full-time Students Seeking a BSBA Degree

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EH 101</td>
<td>EH 102</td>
<td>CM 113</td>
<td>3</td>
</tr>
<tr>
<td>Freshman</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td><strong>33</strong></td>
</tr>
<tr>
<td>*MA 143/121 (3)</td>
<td>MA 151/153</td>
<td>Humanities</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EC 142</td>
<td>EC 143</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>12</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Sophomore</td>
<td>MIS 201</td>
<td>MSC 287</td>
<td>AC 212</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
<td>3</td>
<td>AC 222</td>
<td>0</td>
</tr>
<tr>
<td>Science</td>
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<td>6</td>
<td></td>
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<td>Bib 230</td>
<td>1</td>
<td>Science</td>
<td>Humanities</td>
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<td></td>
<td>10-11</td>
<td>9-10</td>
<td>12</td>
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<td><strong>64-66</strong></td>
<td></td>
<td><strong>31-33</strong></td>
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98
### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKT 301</td>
<td>3</td>
</tr>
<tr>
<td>MGT 301</td>
<td>3</td>
</tr>
<tr>
<td>FIN 301</td>
<td>3</td>
</tr>
<tr>
<td>Legal Env. of Bus.</td>
<td>3</td>
</tr>
<tr>
<td>Major 1</td>
<td>3</td>
</tr>
<tr>
<td>EH 300</td>
<td>3</td>
</tr>
<tr>
<td>MSC 385</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

**Three Year Total: 100-102**

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major 4</td>
<td>3</td>
</tr>
<tr>
<td>Major 5</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Major 6</td>
<td>3</td>
</tr>
<tr>
<td>Major 7</td>
<td>3</td>
</tr>
<tr>
<td>Int'l Bus</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

**Total Minimum Degree Requirements: 128***

*Students may complete a BSBA degree with 128 semester hours. The number of hours of free electives available may vary depending upon an entering student’s math placement, transfer credits, and number of hours in science (6-8). For more information refer to the section on BSBA degree requirements.

### Possible Minors for the BSBA Major

BSBA degree candidates may supplement their degree program by choosing one of the minors listed below. Students electing a minor may use the 15 hours of electives outside Administrative Science and free electives to constitute a minor. However, students who chose a minor may be required to complete more than 128 hours. Courses counted in a minor may not be counted to meet core or major course requirements for a BSBA.

#### BSBA Minor in Computer Science

A student desiring a minor in computer science must complete the following 21 hours of computer science courses: CS 108, 208, 308, 311, 314, 317 and 470.

#### BSBA Minor in Interpersonal and Organizational Communications

**Communication Arts:**

Students pursuing degree programs in any of the Administrative Science disciplines can select a minor in Communication Arts. Courses in the Communication Arts curriculum are designed (1) to promote an understanding of issues related to personal, social, and professional communication situations, and (2) to provide opportunities for students to improve communication skills. Specific skills found most useful by Administrative Science majors include interviewing (CM 311), persuasion (CM 310), small group communication (CM 251), organizational communication (CM 350), and advanced presentational speaking (CM 413). Students pursuing specific career tracks are encouraged to consult with Communication Arts faculty members about additional offerings.
BSBA Minor in Mathematics

The following are examples of approved mathematics minors for business majors:

- MA 153, 154, 233, 244, 251, and either
  - a. ST 281, ST 387, MA 385; or
  - b. MA 352, 385; or
  - c. MA 385, 415.

Students who feel that substitutions can produce a minor better suited for their needs should consult their faculty adviser about the feasibility of such substitutions.

BSBA Minor in Foreign Language

For BSBA majors interested in career opportunities in international business, the following foreign language minor has been approved:

- Elementary FL (French, German, Russian, Spanish)
  - FL* 101, 102 ................................................. ......................................... 6
- Intermediate FL (French, German, Russian, Spanish)
  - FL 201, 202 .................................................. ................................... .3-6
- Advanced Conversation FL 3-- ........................................................................ 3
- Advanced Composition FL 3-- ........................................................................ 3
- Culture FL 3-- .................................................................................................. 3
- Business and Professional FL 3-- .................................................................... 3

*FL A foreign language selected from French, German, Russian or Spanish.

BSBA Minor in Psychology

A BSBA major who chooses a minor in psychology must take a minimum of 21 hours, selected with the assistance of a psychology adviser, including PY 103.

Administrative Science as a Minor

Students desiring to supplement a major outside of Administrative Science may choose a minor consisting of 21 hours of Administrative Science courses. Students who choose Administrative Science as a minor should take EC 142 and EC 143 or EC 239 to meet their social science degree requirements. An Administrative Science minor consists of: AC 211 (Lab AC 221), AC 212 (Lab AC 222), FIN 301, MGT 301, MKT 301, and 6 hours of Administrative Science courses at the 300 or 400 level.

Certificate in Accounting

Many individuals have expressed a desire to pursue a career in accounting after having earned a bachelor’s degree in another discipline. In order to take the Uniform Certified Public Accountant Examination in Alabama, 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/she had majored in accounting. In order to meet this need, UAH offers a Certificate in Accounting Program. Admission to the program is limited to students having a bachelor’s degree in a field other than accounting.
The requirements for a Certificate in Accounting are set out below. It takes approximately two years to complete the program because of the sequence of courses and prerequisites. Students planning to take the Uniform C.P.A. Examination are advised to take more courses than the minimum required for the certificate.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS 201</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MSC 287</td>
<td>Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BLS 221</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>AC 211</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>AC 221</td>
<td>Accounting Lab I</td>
<td>0</td>
</tr>
<tr>
<td>AC 212</td>
<td>Principles of Accounting II</td>
<td>0</td>
</tr>
<tr>
<td>AC 222</td>
<td>Accounting Lab II</td>
<td>0</td>
</tr>
<tr>
<td>AC 301</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>AC 310</td>
<td>Intermediate Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>AC 311</td>
<td>Intermediate Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>AC 312</td>
<td>Intermediate Accounting III</td>
<td>3</td>
</tr>
<tr>
<td>AC 313</td>
<td>Income Tax Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>AC 431</td>
<td>Auditing I</td>
<td>3</td>
</tr>
<tr>
<td>AC 314</td>
<td>Cost Accounting</td>
<td>3</td>
</tr>
<tr>
<td>AC 323</td>
<td>Income Tax Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>AC 415</td>
<td>Advanced Financial Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>AC 425</td>
<td>Advanced Financial Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>AC 432</td>
<td>Auditing II</td>
<td>3</td>
</tr>
<tr>
<td>BLS 231</td>
<td>Business Law II</td>
<td>3</td>
</tr>
<tr>
<td>AC 442</td>
<td>Internal and Operational Auditing</td>
<td>3</td>
</tr>
</tbody>
</table>

Two of the following: 6

The student must counsel with the Coordinator of Undergraduate Advisement, have the approval of the Director of the Division of Accounting and Business Legal Studies, and be admitted to UAH as a regular student before enrolling in the program. A maximum of 12 hours will be accepted by transfer credit to apply to the Certificate in Accounting.

### Bachelor of Arts in Economics Degree Requirements

The BA in economics curriculum emphasizes the liberal arts aspects of economic study providing the student with a greater appreciation and understanding of the economic, cultural, and political environment of our society. This avenue of study is especially useful to students interested in pursuing graduate study in economics or other related academic fields. The BA degree in economics is also an excellent preparation for students planning careers in business, law, the foreign service or other related professions.

The School of Administrative Science requires that the student desiring an Area of Concentration (AOC) in economics must satisfy the general education requirements for the BA degree.
General Education Requirements: Semester Hours
English Composition .................................................. 6
Survey of Literature .................................................. 6
Origins and Development of the Contemporary World ............ 6
Foreign Language ..................................................... 6-12
Social Science (EC 142-143) ........................................... 6

One of the following Science-Mathematics options:

a. Mathematics, 6 hours; one laboratory science, 8 hours .................. 14
b. Two laboratory sciences .................................................................. 16
c. Mathematics, 3 hours; one laboratory science, 8 hours; another laboratory science, 4 hours .................................................. 15
d. Mathematics, 3 hours; natural science sequence, 12 hours (NS 111, 112, 113) .................................................. 15

14-16

Total General Education Requirements 44-52

Economics Major (Minimum requirements):

Economics Core (including MSC 287, EC 310 340, 341, 345, 352, 448) .................................................. 21

Economics Electives (must be preapproved by the student’s economics adviser) .................................................. 15

Minor (see examples below) .................................................. 21

Electives (total number of semester hours to 128) 25-33

At Least 128

An example of an AOC for a degree in economics for students interested in graduate work in economics:

MSC 287 Business Statistical Analysis .................................. 3
EC 310 Introduction to the Use of Mathematics in Economics .................. 3
EC 322 Public Policy Toward Business .................................. 3
EC 325 Intermediate Statistics ........................................ 3
EC 340 Macro Economics Analysis .................................. 3
EC 341 History of American Economic Growth ...................... 3
EC 345 Micro Economic Analysis .................................. 3
EC 352 Money and Banking ........................................ 3
EC 430 Introduction to Econometrics .................................. 3
EC 448 Development of Economic Theory .................................. 3
EC 460 Problems in Economics .................................. 3
EC 485 Comparative Economic Systems .................................. 3

36
An example of an AOC for a degree in economics for students interested in entering the labor force:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 211</td>
<td>Principles of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>AC 221</td>
<td>Accounting Lab I</td>
<td>0</td>
</tr>
<tr>
<td>MGT 301</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>MSC 287</td>
<td>Business Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EC 310</td>
<td>Introduction to the Use of Mathematics in Economics</td>
<td>3</td>
</tr>
<tr>
<td>EC 321</td>
<td>Engineering Economy</td>
<td>3</td>
</tr>
<tr>
<td>EC 322</td>
<td>Public Policy Toward Business</td>
<td>3</td>
</tr>
<tr>
<td>EC 325</td>
<td>Intermediate Statistics</td>
<td>3</td>
</tr>
<tr>
<td>EC 340</td>
<td>Macro Economics Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EC 341</td>
<td>History of American Economic Growth</td>
<td>3</td>
</tr>
<tr>
<td>EC 345</td>
<td>Micro Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EC 352</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>EC 430</td>
<td>Advanced Economics and Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>EC 448</td>
<td>Development of Economic Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

The following examples are typical of minors for students who major in economics. Students who feel that substitutions can produce a program better suited to their needs, should consult their faculty adviser.

- **Computer Science** — CS 113, 208, 214, 308, 311, 411 and either 501, 513, or 517.

- **Industrial and Systems Engineering** — ISE 326, 327, 321, 490, 427, 428 and 429.

- **Mathematics** — MA 153, 154, 233, 244, 251, and two MA courses 300 level or above approved by the adviser.

- **Operation's Research** — CS 113, ISE 220, 327, 390, 490, 571, 572, and 522 or 526.

- **Other** — A minor of 21 hours in one discipline, including at least 6 hours numbered above 300 approved by the department concerned and the student’s economics faculty adviser.

**Economics Minor**

A student having an area of interest in a discipline other than economics, but wishing a minor in economics, may choose in consultation with and approval of the economics faculty 21 semester hours of appropriate courses in economics including 6 semester hours in courses numbered 300 or above or courses offered in economics as part of an area of cognate studies with other disciplines including a minimum of 12 semester hours, 6 of which much be in courses numbered 300 or above.
The following are examples of approved minors for students with a major in various other disciplines:

**Mathematics** — EC 142, 143, MSC 287 and 12 hours from EC 340 341, 345, 352, 430 and 448.

**History or Political Science** — EC 142, 143, 335, 341, 448, 485.

**Psychology or Sociology** — EC 142, 143, 325, 335, 341, 430, 485.

**Economics for Second Area of Study**

Students majoring in elementary education may select economics as their second area of study. A minimum of 18 hours, 15 of which must be upper level, are to be selected. Recommended are EC 142, 143, 335, 341, 448, and 485.

**Undergraduate Course Offerings**

All students, both administrative science and non-administrative science, must meet general School of Administrative Science prerequisite requirements for upper division administrative science courses, in addition to the specific course prerequisites cited in the course descriptions. General prerequisites for all upper division administrative science courses are the completion of EH 101-102, junior status (completion of at least 60 semester hours), and admission to UAH as a regular student.

**Accounting (AC)**

<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>Principles of Accounting I</td>
<td>3 hrs.</td>
<td>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: AC 221.</td>
</tr>
<tr>
<td>212</td>
<td>Principles of Accounting II</td>
<td>3 hrs.</td>
<td>Study of the basic external financial statements with special attention to the unique accounting problems of partnerships and corporations. Prerequisite: AC 211. Parallel: AC 222.</td>
</tr>
<tr>
<td>221</td>
<td>Accounting Lab I</td>
<td>0 hrs.</td>
<td>Microcomputer laboratory setting reinforces lecture material from AC 211 through computerized practice sets. Parallel: AC 211. Lab Fee: Level 3.</td>
</tr>
<tr>
<td>222</td>
<td>Accounting Lab II</td>
<td>0 hrs.</td>
<td>Microcomputer laboratory setting reinforces lecture material from AC 212 through computerized practice sets. Parallel: AC 212. Lab Fee: Level 3.</td>
</tr>
<tr>
<td>301</td>
<td>Managerial Accounting</td>
<td>3 hrs.</td>
<td>Introduction to basic principles of managerial accounting including process and job order costing, standard costing, budgeting, and cost-volume-profit relationships. Uses of accounting information for management decision making are emphasized. Prerequisite: AC 212.</td>
</tr>
<tr>
<td>307</td>
<td>Accounting Information Systems</td>
<td>3 hrs.</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 computerized systems. Lab Fee: Level 3. Prerequisites: MIS 201, AC 301. (Same as MIS 307).</td>
</tr>
<tr>
<td>310</td>
<td>Intermediate Accounting I</td>
<td>3 hrs.</td>
<td>Detailed theoretical and practical study of financial accounting. Introduction to accounting</td>
</tr>
</tbody>
</table>
theory; professional accounting organizations and their contributions to accounting theory and practice. Review of the accounting model and information processing, analysis of income and retained earnings statements, review of balance sheet; concepts of present and future value. Current assets are covered in depth. Prerequisite: AC 212.

311 Intermediate Accounting II 3 hrs.
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: AC 310.

312 Intermediate Accounting III 3 hrs.
Application of present value concepts to accounting problems: bonds, pension costs, and leases. Accounting changes, earnings per share computation, segment and interim reporting, statement of changes in financial position, and accounting for changing prices. Prerequisite: AC 311.

313 Income Tax Accounting I 3 hrs.
Determination of taxable income, business and nonbusiness deductions, and selected aspects of tax accounting for individuals and sole proprietorships. Prerequisite: AC 301.

314 Cost Accounting 3 hrs.
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: AC 301.

317 Government (Fund) Accounting 3 hrs.
Fund accounting at state and local governments, hospitals and universities. Special accounting principles, budgeting, accounting for various funds and account groups, are emphasized. Prerequisite: AC 301.

323 Income Tax II 3 hrs.
Tax accounting for partnerships, corporations, Sub chapter, S corporations, estates, and trusts. Tax administration and research are emphasized. Prerequisite: AC 313.

Accounting issues facing multinational enterprises, both partnerships and corporations. Formation, operation, and liquidation of partnerships; accounting for foreign currency transactions and foreign subsidiaries; and worldwide accounting and auditing standards. Fund accounting concepts as applied to state and local governments are introduced. Prerequisite: AC 312.

420 Internship in Accounting 3 hrs.
Under the direction of a faculty adviser, experience is gained with a public accounting firm or an industrial firm. Prerequisite: Senior standing and permission of instructor.

425 Advanced Financial Accounting II 3 hrs.
Study of specialized accounting topics with emphasis on accounting for business combinations, liquidations, and reorganizations. Accounting for installment sales and consignments. Prerequisite: AC 415.

431 Auditing I 3 hrs.
Conceptual foundations of auditing practice. Basic auditing concepts, including professional ethics and legal liability, independence, and due audit care. Auditing of electronic data processing systems, audit sampling, standards of reporting. Prerequisites: AC 312, MSC 287 and senior standing.

432 Auditing II 3 hrs.
Practical application of auditing concepts and standards. A hypothetical audit of a selected business centered around a practice case and audit steps required in each phase of the annual examination. Emphasis is placed upon auditing procedures for tests of transactions and substantive testing. Prerequisite: AC 431.
442 Internal and Operational Auditing 3 hrs.
Introduction to the methodology of internal and operational auditing and to the utilization of the results of the audit in decision-making. Organization and operation of an internal audit department; auditing techniques; application of scientific methods; and preparation of audit reports. Prerequisite: AC 431.

450 Studies in International Accounting 3 hrs.
Seminar on current topics in international accounting. Prerequisite: AC 415.

460 Controllership 3 hrs.
Interrelationship of managerial accounting and analytical, behavioral, and technological considerations in the analysis and design of planning and control systems. Investigation of goals of firms and organizational structures for specifying system requirements. Discussion and evaluation of the component elements of these systems against system requirements and the present. Future roles of management accounting within the scope of management information and control systems. Case studies for illustration. Prerequisite: AC 314 and senior standing.

470 Seminar in Contemporary Issues of Accounting 3 hrs.
Seminar on current topics in external financial reporting and auditing. Prerequisite: AC 431 and senior standing.

473 EDP Audit and Controls 3 hrs.
Introduction to information systems audit and controls. Prerequisite: MIS 340. Lab Fee: Level 3.

490 Special Projects 3 hrs.
Active involvement in an on-going project in a business enterprise that has particular interest and relevance to the student or an in-depth investigation of contemporary Accounting problems. Prerequisites: senior standing and approval of the Division Director.

Graduate Courses (for details, see Graduate Catalog)

573 EDP Audit & Controls 3 hrs.

601 Introduction to Accounting and Finance 3 hrs.

670 Managerial Accounting and Finance 3 hrs.

Administrative Science (AS)

621 Introduction to Administrative Science 3 hrs.

622 Human Behavior Organization 3 hrs.

623 Organizational Theory 3 hrs.

624 Organizational Problems 3 hrs.

625 Labor Relations and the External Environment 3 hrs.

629 Leadership and Motivation 3 hrs.

631 Personnel Administration in Organizations 3 hrs.

632 Civil Systems Planning 3 hrs.

633 Socio-Economic Consequences of Government Procurement 3 hrs.
634 Seminar in Administrative Science 3 hrs.
635 Administrative Science Internship 1-3 hrs.
637 Organizational Policy 3 hrs.
650 Selected Research Topics 3 hrs.

Business Legal Studies (BLS)

211 Legal Environment of Business 3 hrs.
A study of the legal environment of business including ethical, social, and political influences on both profit and non-profit organizations.

221 Business Law I 3 hrs.
Introduction to legal system and law of contracts, torts, and real property. Legal problems of business organizations.

231 Business Law II 3 hrs.
In-depth study of Uniform Commercial Code topics including: sales, commercial paper, secured transactions, documents of title, and investment securities. Debtor-creditor relationships. Antitrust law. Prerequisite: BLS 221.

310 Labor Law 3 hrs.
Analysis of background, content, and significance of labor relations law. Prerequisite: MGT 301.

Graduate Courses (see Graduate Catalog for details)

615 The Social, Legal and Ethical Environment of Organizations 3 hrs.

Economics (EC)

142 Principles of Economics I 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 EC 239 for additional credit. Lab fee: Level 2. Prerequisite: MA 104 or 105 or recommended equivalent.

143 Principles of Economics II 3 hrs.
Continuation of EC 142. More 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 EC 239 for additional credit. Lab fee: Level 2. Prerequisite: EC 142.

239 Principles of Economics for Engineering and Science Students 3 hrs.
Basic concepts of microeconomics and macroeconomics for students with some degree of 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. Lab fee: Level 2. Prerequisite: MA 153. Note: Students who complete this course cannot receive more than 3 hrs. degree credit from among this course, EC 142 and EC 143.

241 Marketing Economics 3 hrs.
Survey. Marketing activities, principles, structures, functions, policies, prices, costs, and quantitative problems from social, consumer, and management points of view. Prerequisite: EC 143.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Marxian Economics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Economic theory of capitalism as developed in writings of Marx, Engles, and Lenin. Marx’s theory of labor value, theory of crises, and theory of imperialism. Marxist theory in terms of its place in history of economic thought as contrasted with the more recent analytical approach to the study of a capitalistic system. Prerequisite: approval of the instructor.</td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>Introduction to the Use of Mathematics in Economics and Business</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Review of algebra and introduction to matrix algebra and calculus with application to economic and business problems. Prerequisite: EC 143, MA 105 or its equivalent.</td>
<td></td>
</tr>
<tr>
<td>311</td>
<td>Computer Applications in Economics and Business I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Business systems and data processing procedures; impact of data processing methods on the economic structure of business. User communication, file design, report control, documentation. Data Bases, information collection, planning and control, systems design concepts including COBOL. Lab fee: Level 3. Prerequisite: CS 208. Not open to students who have had CS 211 or CS 310. Same as MIS 311 and CS 311.</td>
<td></td>
</tr>
<tr>
<td>315</td>
<td>Urban Economics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Urban phenomena and problems. Central place theory, location theory, and externalities. Location patterns and changes within metropolitan areas. Analysis of selected urban problems. Roles of private and public sectors in urban development.</td>
<td></td>
</tr>
<tr>
<td>321</td>
<td>Engineering Economy</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Economic evaluation of engineering alternatives. Interest, depreciation, time-value of investments, learning curves, and replacement analysis. Prerequisite: EC 142, MA 233, or EC 310. (Same as EG 321).</td>
<td></td>
</tr>
<tr>
<td>322</td>
<td>Public Policy Toward Business</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>View of impact of government on operations of business firms: consumer product regulation, job-safety regulation, environment, regulation of personnel practices, government procurement, and antitrust regulation. (Same as MGT 322)</td>
<td></td>
</tr>
<tr>
<td>325</td>
<td>Intermediate Economic and Business Statistics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Probability and probability distributions, sampling theory and statistical inference, analysis of variance, linear regression and correlation, analysis of time series, and index numbers and their construction. Lab fee: Level 3. Prerequisite: MSC 287 or its equivalent. (Same as MSC 325).</td>
<td></td>
</tr>
<tr>
<td>335</td>
<td>Economic Geography</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Spatial relationships between various resources; location factors in primary, secondary, and tertiary activities; geographic patterns of production, processing, and distribution of commodities, and economic development.</td>
<td></td>
</tr>
<tr>
<td>340</td>
<td>Macro Economic Analysis</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Comprehensive study of national economy 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: EC 143, EC 310, or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>341</td>
<td>History of American Economic Growth</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Origins of basic economic institutions in Europe; detailed historical development of these institutions in the United States. Prerequisite: EC 143 or permission of instructor.</td>
<td></td>
</tr>
<tr>
<td>344</td>
<td>European Economic History</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Industrial Revolution to current developments covering institutions, activities, economic systems, and policies. Prerequisite: EC 143 or permission of instructor.</td>
<td></td>
</tr>
</tbody>
</table>
345 Micro Economic Analysis 3 hrs.
Economic principles underlying value and distribution with additional training in application of these principles to problems of analysis. Prerequisite: EC 143, EC 310, or its equivalent.

352 Money and Banking 3 hrs.
Organization, operation, and economic significance of monetary and banking systems. Prerequisite: EC 143. (Same as FIN 352).

353 Public Finance 3 hrs.
Principles of taxation, government expenditures, borrowing, and fiscal administration. Prerequisite: EC 143. (Same as FIN 353).

400 The Soviet Economy 3 hrs.
Soviet economic theory and strategy for economic growth; practice of economic planning, resource development and utilization, interpretation of economic performance, and comparison with China.

470 Computer Applications in Economics and Business II 3 hrs.
Techniques in economic business modeling, case studies of business applications and computer simulation of business operations. Projects requiring independent research. Lab fee: Level 3. Prerequisite: EC 311, MIS 311 or CS 311 or CS 310. (Same as CS 470 or MIS 470).

430 Introduction to Econometrics for Economics and Business Applications 3 hrs.
Review inferential statistics, statistical relationship of economic and business models (single-equation versus simultaneous-equation models), multiple regression techniques and their application to estimation of economic and business models. Lab fee: Level 2. Prerequisite: EC 310, 340, or 345 or MSC 385, MSC 287 or approval of instructor. (Same as MSC 430).

446 International Economics and Trade 3 hrs.
Theoretical principles underlying international trade with application of these principles to recent historical developments and to current national policies. Prerequisite: EC 345 or approval of instructor.

448 Development of Economic Theory 3 hrs.
Historical development of economic thought from ancient times to the nineteenth century and from early modern times to present. Prerequisite: EC 345.

452 State and Local Finance 3 hrs.
Administration, fiscal importance, and economic effects of state and local finances. Recent trends in state and local revenue and expenditure and their significance. Prerequisite: EC 142. (Same as FIN 452).

460 Problems in Economics 3 hrs.
Special topics in areas of student interest. Prerequisite: approval of instructor.

464 Regional Economics 3 hrs.
Location theory and regional economics, factors affecting location of economics activity, consideration of differential growth rate among regions, and introduction to methods of regional analysis.

485 Comparative Economic Systems 3 hrs.
Principle economic systems comparing resource allocation consumption, pricing, production, investment, income distribution, and central planning.
Graduate Courses (for details see Graduate Catalog)

546 International Economics and Trade 3 hrs.
564 Regional Economics 3 hrs.
585 Comparative Economic Systems 3 hrs.
600 Theory of Income and Employment 3 hrs.
607 Survey of Economic Theory 3 hrs.
610 Theory of Value and Distribution 3 hrs.
620 Econometrics 3 hrs.
626 Managerial Economics 3 hrs.
630 Evolution of Economic Thought 3 hrs.
640 Seminar in Economics 3 hrs.
700 Research in Economics 3 hrs.

Finance (FIN)

260 Personal Finance 3 hrs.
Problems and techniques of family financial planning. Benefits and warnings relative to consumer credit, insurance, home ownership, and personal investing in light of current economic and legal constraints.

301 Principles of Finance 3 hrs.
A study of finance in the operation and organization of business enterprises. Short and long-term (capital) budgeting, ratio analysis, working-capital management, and valuation of the firm. Prerequisite: AC 212 and EC 143.

352 Money and Banking 3 hrs.
Organization, operation, and economic significance of monetary and banking systems. Prerequisite: EC 143. (Same as EC 352).

353 Public Finance 3 hrs.
Principles of federal government taxation and expenditures, borrowing, and fiscal administration. Prerequisite: EC 143. (Same as EC 353).

362 Security Analysis and Portfolio Management 3 hrs.
Approaches to investment strategy and decision-making. Valuation of securities and import of dividend policy and capital structure. Principles underlying security selections, timing, and diversification to achieve optimum balance for various investment goals. Prerequisite: FIN 301.

375 Financial Institutions 3 hrs.
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.

378 Business Analysis for Financial Managers 3 hrs.
Specific decision-making problems encountered by financial managers. Attention will be given to the over-all financial environment and how monetary regulations affect it. Prerequisite: FIN 301.
410 Principles of Real Estate
Introduction to the principles and practices of real estate businesses, including economics, finance, law, marketing, planning, development, valuation and brokerage. Prerequisite: FIN 301.

420 Principles of Risk and Insurance
Introduction to the basic principles of life, property, liability and other areas of insurance. Importance of risk bearing in personal and business activities and the various methods of handling risk. Prerequisite: FIN 301.

430 Real Estate Finance
Introduction to real estate finance— institutions, instruments, real estate financing, financial leverage, financial planning, investment strategies and decisions. Prerequisite: FIN 301.

431 Managerial Finance and Policy Determination
Use of advanced cases in financial management to analyze function of the financial executive. Development of ability to analyze different types of managerial problems with tools acquired in earlier courses. Prerequisite: FIN 301 and senior standing.

452 State and Local Finance
Administration, fiscal importance and economic effects of state and local finances. Recent trends in state and local revenue and expenditure and their significance. Prerequisite: EC 142 and senior standing. (Same as EC 452).

454 International Finance
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 (EC 352), senior standing or approval of division director.

460 Monetary and Credit Policy
Influence of governmental monetary policies on money supply, price level, interest rates, and employment with emphasis on maintenance of economic stability and progress. Prerequisite: FIN 352 (EC 352); EC 340 optional but recommended, senior standing or approval of division director.

470 Seminar in Finance
Extensive readings and reports reflecting current developments and trends in financial theory and its applications to the decision-making process. Development of a logical approach to financial problems using accepted techniques of financial analysis. Prerequisite: FIN 431, senior standing or approval of division director.

490 Special Projects
Active involvement in an on-going project in a business enterprise that has particular interest and relevance to the student or an in-depth investigation of contemporary management problems. Prerequisites: senior standing and approval of division director.

Graduate Courses (For details, see Graduate Catalog)

510 Principles of Real Estate

520 Principles of Risk and Insurance

530 Real Estate Finance

554 International Finance

560 Monetary and Credit Policy

570 Seminar in Finance

601 Introduction to Accounting and Finance
Management (MGT)

301 Principles of Management
Elements of the managerial process fundamental to successful operation of various types of enterprises. Prerequisite: junior standing.

322 Public Policy Toward Business
Prerequisite: junior standing. (Same as EC 322).

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.

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.

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.

405 Small Business Management
Application of principles and practices of modern management start-up operation and control of small business firms. Role of small businesses in the economy. Opportunities and operational problems of small firms. Prerequisite: MGT 301 and senior standing.

412 Information Systems Design and Implementation
Advanced coverage of the strategies and techniques of structured systems development. Emphasizes information analysis and the local 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. Lab fee: Level 3. Prerequisite(s): MIS 301 and AC 307 (same as MIS 412).

420 Business Policy
Integration of principles and methods acquired in the core curriculum of business strategy, policy, and management action. Analyses of comprehensive business cases; opportunity to acquire and develop skills in diagnosing and solving complex business problems. Prerequisite: senior standing, completion of all core courses and 50% of major option courses.

430 Business and Society
Power influence in American business. Problems that have developed historically and difficulties in today's business environment. Their avoidance by proper recognition of responsibilities. Prerequisite: MGT 301, MKT 301 and senior standing.

440 Honors: Small Business Counseling
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.
International Management 3 hrs.
Management of the multinational business enterprise in interaction with its political, economic, social, cultural, and legal environments. Prerequisite: senior and approval of division director.

Seminar in Management 3 hrs.
Selected topics in management. Prerequisite: senior and approval of division director.

Special Projects 3 hrs.
Active involvement in an on-going project in a business enterprise that has particular interest and relevance to the student or an in-depth investigation of contemporary management problems. Prerequisites: senior standing and approval of division director.

Graduate Courses (for details see Graduate Catalog.)

EDP Audit and Controls 3 hrs.
International Management 3 hrs.
Seminar in Management 3 hrs.
Information System Planning 3 hrs.
Information Resource Management 3 hrs.
Introduction to Management Information Systems 3 hrs.
Modeling and Decision System 3 hrs.

Management Information Systems (MIS)

Microcomputer Applications
Provides students with a working knowledge of microcomputers. The course covers background orientation material. Its main focus is the business software applications of microcomputers. Applications orientation are computer programs that perform user tasks, such as word processing, accounting packages, electronic spreadsheets, data based management, networking, and basic programming. Lab fee: Level 3. Does not carry credit for Computer Science majors. (Same as CS 101)

Introduction to Computers and Information Systems 3 hrs.
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. Management of the computer as a resource. Impact of computers on the individual and society, including security, privacy, and control. Programming in the BASIC language and the use of computer terminals. Applications and examples will generally be from administrative areas. Lab fee: Level 3. Prerequisites: MA 121 or MA 143 or Level III placement. (Same as CS 201).

Introduction to Computers in Business 3 hrs.
Information processing and computer fundamentals; computer systems, programming, planning, and introductory COBOL programming. Table handling and hierarchical data structure. Lab fee: Level 3. Prerequisites: MIS 201 or CS 113. Same as CS 211.

Information Systems in Organizations 3 hrs.
Understanding the role of information systems in organizations and how they relate to organizational objectives and organizational structure. Introduces information system applications. Lab fee: Level 3. Prerequisites: MIS 201, MSC 387, AC 211, and AC 212.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>307</td>
<td>Accounting Information Systems</td>
<td>3 hrs.</td>
<td>Design, operation, analysis of accounting information systems with respect to data input,</td>
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<td>processing, storage, recall, security, internal control, and the audit trail. Emphasis will</td>
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<td>be placed on computerized systems. Lab fee: Level 3. Prerequisites: MIS 201, AC 212. (Same</td>
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<td>as AC 307).</td>
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<tr>
<td>310</td>
<td>Introduction to Business Data Processing</td>
<td>3 hrs.</td>
<td>Overview of COBOL, advanced COBOL features, control language and file handling (sequential</td>
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<td>random and indexed sequential), management of computers, documentation, and maintenance.</td>
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<td></td>
<td>Design and implementation of computer based information systems. Lab fee: Level 3. Prerequisite:</td>
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<td>MIS 211.</td>
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<tr>
<td>311</td>
<td>Computer Applications in Economics and Business I</td>
<td>3 hrs.</td>
<td>Business systems and data processing procedures; impact of data processing methods on the</td>
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<td>economic structure of business. User communication, file design, report control, documenta-</td>
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<td>tion. Data bases, information collection, planning and control, systems design concepts</td>
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<td>including COBOL. Lab fee: Level 3. Prerequisites: CS 208. Not open to students who have</td>
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<td>had CS 211 or CS 310. (Same as EC 311 or CS 311.)</td>
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<tr>
<td>340</td>
<td>Data Bases for Management</td>
<td>3 hrs.</td>
<td>The management of data resources to support effectively the information systems of</td>
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<td>organizations. Lab fee: Level 3. Prerequisite: MIS 211.</td>
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<tr>
<td>400</td>
<td>Decision Support Systems</td>
<td>3 hrs.</td>
<td>Analysis of information support systems which aid the manager in the decision making</td>
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<td>process. Lab fee: Level 3. Prerequisites: MIS 201, MSC 387, MGT 301, MKT 301, FIN 301, and</td>
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<td>MSC 385.</td>
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<tr>
<td>412</td>
<td>Information Systems Design and Implementation</td>
<td>3 hrs.</td>
<td>Advanced coverage of the strategies and techniques of structured systems development.</td>
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<td>Emphasizes information analysis and the logical specifications of the system. Students</td>
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<td>prepare exercises and case studies to develop proficiency in information analysis techniques.</td>
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<td></td>
<td>Integrates computer technology, systems analysis, systems design, and organizational</td>
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<td>behavior in designing large scale application or decision support systems. Lab fee: Level 3.</td>
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<td>Prerequisites: MIS 301 and AC 307. Same as MGT 412.</td>
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<tr>
<td>440</td>
<td>Advanced Data Bases for Management</td>
<td>3 hrs.</td>
<td>In-depth investigation of data modeling, system development, and data administration in a</td>
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<td>data base environment. Lab fee: Level 3. Prerequisite: MIS 340.</td>
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<tr>
<td>470</td>
<td>Computer Applications in Economics and Business II</td>
<td>3 hrs.</td>
<td>Techniques in economic business modeling, case studies of business applications and</td>
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<td>computer simulation of business operations. Projects requiring independent research. Lab</td>
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<td></td>
<td>fee: Level 3. Prerequisite: MIS 311. (Same as CS 470, or EC 470.)</td>
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<tr>
<td>473</td>
<td>EDP Audit &amp; Controls</td>
<td>3 hrs.</td>
<td>Introduction to information systems audit and controls. Lab fee: Level 3. Prerequisite: MIS</td>
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<td>340.</td>
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<tr>
<td>474</td>
<td>Information System Planning</td>
<td>3 hrs.</td>
<td>Introduction to the financial, technical and strategic information systems planning processes.</td>
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<td>Lab fee: Level 3. Prerequisite: MIS 470.</td>
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<tr>
<td>475</td>
<td>Information Resource Management</td>
<td>3 hrs.</td>
<td>Seminar course providing a broad overview of the information systems management</td>
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<td>function. Lab fee: Level 3. Prerequisite: MIS 470.</td>
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<tr>
<td>490</td>
<td>Special Projects</td>
<td>3 hrs.</td>
<td>Active involvement in an on-going project in a business enterprise that has particular</td>
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<td>interest and relevance to the student of an in-depth investigation of contemporary manage-</td>
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<td>ment information systems problems. Prerequisite: senior standing and approval of division</td>
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<td>director.</td>
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</table>
### Graduate Courses (for details see Graduate Catalog)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>573</td>
<td>EDP Audit and Controls</td>
<td>3 hrs</td>
</tr>
<tr>
<td>574</td>
<td>Information System Planning</td>
<td>3 hrs</td>
</tr>
<tr>
<td>575</td>
<td>Information Resource Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>609</td>
<td>Introduction to Management Information Systems</td>
<td>3 hrs</td>
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<tr>
<td>617</td>
<td>Modeling and Decision Systems</td>
<td>3 hrs</td>
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</table>

### Management Science (MSC)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>287</td>
<td>Statistical Analysis</td>
<td>3 hrs</td>
</tr>
<tr>
<td>325</td>
<td>Intermediate Economic and Business Statistics</td>
<td>3 hrs</td>
</tr>
<tr>
<td>385</td>
<td>Production/Operations Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>386</td>
<td>Advanced Production/Operations Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>395</td>
<td>Sampling in the Business Environment</td>
<td>3 hrs</td>
</tr>
<tr>
<td>401</td>
<td>Production Planning and Control</td>
<td>3 hrs</td>
</tr>
<tr>
<td>402</td>
<td>Materials Management</td>
<td>3 hrs</td>
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<tr>
<td>430</td>
<td>Introduction to Econometrics for Economics and Business Applications</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

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**Statistical Analysis (3 hrs)**
Collection, classification, and presentation of data, measures of central tendency, and dispersion, introduction to probability distribution and sampling theory, confidence limits and test of significance, chi-squared and "t" distribution. Lab fee: Level 3. Prerequisite: Level 3 math placement, MA 143, or MA 121 or equivalent.

**Intermediate Economic and Business Statistics (3 hrs)**
Probability and probability distributions, sampling theory and statistical inference, analysis of variance, linear regression and correlation, analysis of time series, and index numbers and their construction. Prerequisite: junior standing. Lab fee: Level 2. (Same as EC 325).

**Production/Operations Management (3 hrs)**
Management of production operations function in business organizations. Production systems design considerations, productions planning, production control, inventory control, quality control, and maintenance. Applicable quantitative methods. Lab fee: Level 3. Prerequisites: MGT 301 and MSC 287.

**Advanced Production/Operations Management (3 hrs)**
Further examination of methods applied in MSC 385: linear programming, regression, product and service design, job design, facilities layout, job shop scheduling, MRP, queuing, simulation, and sampling. Lab fee: Level 3. Prerequisite: MSC 385.

**Sampling in the Business Environment (3 hrs)**
Review of elementary concepts, design of questionnaires, methods of data collection, sampling designs, ratio estimation, specialized sampling and survey problems, and analysis of sample data. Lab fee: Level 3. Prerequisite: MSC 385.

**Production Planning and Control (3 hrs)**
In depth study of modern production planning and control, including forecasting, master production scheduling and capacity planning. Lab fee: Level 3. Prerequisites: CS 113, MSC 325, MSC 386.

**Materials Management (3 hrs)**
In depth study of modern materials management techniques including inventory management and control, and production activity control. Lab fee: Level 3. Prerequisites: CS 113, MSC 325, MSC 386.

**Introduction to Econometrics for Economics and Business Applications (3 hrs)**
Review inferential statistics, statistical relationship of economic and business models (single-equation versus simultaneous-equation models), multiple regression techniques and their application to estimation of economic and business models. Lab fee: Level 2. Prerequisite: MSC 385, MSC 287 or approval of instructor. (Same as EC 430).
Seminar in Production Management 3 hrs.
Seminar on current topics related to production management, such as materials requirements planning, flexible manufacturing systems, Japanese management systems, robotics. Lab fee: Level 3. Prerequisites: CS 113, MSC 325, MSC 386.

Special Projects 3 hrs.
Active involvement in an on-going project in a business enterprise that has particular interest and relevance to the student or an in-depth investigation of contemporary management science problems. Prerequisite: senior standing and approval of the division director.

Graduate Courses (for details see Graduate Catalog)

570 Seminar in Production Management 3 hrs.
608 Quantitative Methods I 3 hrs.
640 Principles of Project Management 3 hrs.
641 Applied Project Management 3 hrs.
642 Quantitative Applications in Project Management 3 hrs.
643 Simulation of Project Management 3 hrs.
651 Quantitative Methods II 3 hrs.

Marketing (MKT)

301 Principles of Marketing 3 hrs.
Integration and study of functional commodity, and institutional approaches from viewpoint of consumer and marketing manager. Prerequisite: junior standing.

315 Sales Management and Professional Selling 3 hrs.
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.

316 Retailing Policy and Management 3 hrs.
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.

322 Introduction to Logistics Management 3 hrs.
Survey of logistics systems design, administration, and control. Topics also include transportation, materials handling and information systems. Prerequisites: MKT 301 and MSC 385.

332 Consumer Behavior 3 hrs.
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.

342 Promotional Strategy 3 hrs.
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.
343 Marketing Research Design 3 hrs.
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.

344 Marketing Research Applications 3 hrs.
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, MKT 301, MSC 325, and MKT 343.

345 Market Channel Structure and Strategy 3 hrs.
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.

414 New Product Development 3 hrs.
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, MSC 325, MKT 343, MKT 344.

415 International Marketing 3 hrs.
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. Prerequisite: senior standing.

470 Seminar in Marketing 3 hrs.
Review of selected classics in the literature. Recent developments in marketing theory and application to marketing problem solving. Prerequisite: senior standing.

480 Marketing Management 3 hrs.
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. Prerequisite: MSC 325, MKT 332, MKT 343, MKT 344, and senior standing.

490 Special Projects 3 hrs.
Active involvement in an on-going project in a business enterprise that has particular interest and relevance to the student or an in-depth investigation of contemporary marketing problems. Prerequisite: senior standing and approval of the division director.

Graduate Courses (for details, see Graduate Catalog)

515 International Marketing 3 hrs.

570 Seminar in Marketing 3 hrs.

580 Marketing Management 3 hrs.

606 Marketing Administration 3 hrs.

Procurement (PR)

301 Introduction to Procurement 3 hrs.
Explores the primary aspects of the procurement and management of material resources necessary for government or business operation. Introduction will be made 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. Prerequisite: MSC 385.

117
302 Contract Administration 3 hrs.
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. It includes consideration of the roles of small business and sub-contractors. Prerequisite: PR 301.

303 Cost and Price Analysis 3 hrs.
Presents the tools and techniques available to the student 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: PR 301.

404 Negotiation Techniques 3 hrs.
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 PR 303.

405 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, PR 302, 303 and BLS 211.
School of Arts, Humanities, and Social Sciences

Dean Roy L. Meek, B.A., M.A., Ph.D., Professor of Political Science

The arts, humanities, and social sciences contribute substantially to the understanding of man's relation to himself, to his fellowman, and to the physical and biological world in which he lives.

The arts and the humanities, encompassing art, history, language and literature, music, and philosophy, lead to an understanding and appreciation of life as man has perceived it and as he has lived it. Their study leads to a heightened critical faculty and a greater ability to manipulate and evaluate ideas, to a more effective use of language and to a cultivation of taste. The study of the arts and the humanities is essential to a broad and sensitive awareness of man as he has been, is, and aspires to be.

The social sciences encompass the knowledge that deals with the behavior of man and the culture he has created, knowledge that becomes more necessary as the world grows more complex. Social scientists perform a dual function, assembling complex masses of technical knowledge and attempting continual appraisal of the value systems in our society. The social sciences at UAH, comprising political science, psychology, and sociology, are designed to perform both roles. Since these disciplines are concerned with a social milieu that is both possible and desirable, the approach is scientific in terms of assumptions and methods, but humanistic in its implications.

Undergraduate Degrees and Study

The School of Arts, Humanities, and Social Sciences awards a Bachelor of Arts degree. Each student must declare an area of concentration (AOC) no later than the close of his sophomore year. This AOC must include a major and a minor or supporting cognate studies. The major must be chosen from one of the following disciplines: art, criminal justice, education, English, French, German, history, music, political science, psychology, or sociology. Besides these majors, courses are offered in American Studies, communication, linguistics, philosophy, physical education, Russian, and Spanish.

The supporting studies must include one of the following variations:

1. An established minor drawn from a department offering a major at UAH. The minor must include 21 semester hours or more as prescribed by the department, at least 6 of which must be numbered 300 or above. (Students planning a minor in music, see music department section.)
2. A minor drawn from a discipline without an established major, including 21 semester hours of courses of which at least 6 hours numbered 300 or above.

3. A group of courses designed cognate studies, supporting the major and drawn from two or more disciplines with a minimum of 21 semester hours, 9 of which must be taken in courses numbered 300 or above.

Any minor chosen by a student is subject to approval of the chairman of 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 AOC’s are subject to approval by the dean of the school. Each major department has developed appropriate areas of concentration to provide a sound curriculum of various areas of interest. A student who wishes to deviate from any of the standard AOC’s, however, may work out an individual program with advice from his major department.

A student may pursue a composite major with emphasis in these areas: Russian studies, human growth and development, and foreign language and international trade. These programs involve combinations of disciplines within the School of Arts, Humanities, and Social Sciences and in cooperation with other schools in the university.

Graduate Programs

The School of Arts, Humanities, and Social Sciences offers Master of Arts degrees in English and history and an interdisciplinary graduate degree, the Master of Arts in developmental learning. The school also offers options within the Graduate Program in Administrative Science in the areas of education administration and public administration.

Arts, Humanities, and Social Sciences (AHS)

100 The Art of Being Human 3 hrs.
A humanistic approach to such important ideas as art, music, religion, love, and death, and their relevance to self-fulfillment and the good life.

300 Statistical Analysis 3 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. Includes laboratory. Fee: level 3. Prerequisite: MA 105 or 119.

392 Engineering Ethics and Professional Behavior 3 hrs.
Examination of ethical aspects of decisions made by engineers, including consideration both of the kinds of professional and organizational situations confronting the engineer and philosophic bases of choosing and evaluating. Examination of broader values and responsibilities of the engineer as a professional person. Prerequisite: junior standing.

Special Services (SS)

001 University Study Skills 0 hrs.
Study and test taking skills necessary for success in college. Prerequisite: Special Services admission.

002 Reading Comprehension Level I 0 hrs.
Reading skills necessary for success in college. Prerequisite: Special Services admission. Test scores at or below ninth grade level.

003 Reading Comprehension Level II 0 hrs.
Reading skills necessary for success in college. Prerequisite: Special Services admission. Test scores at or above ninth grade level, and below twelfth grade level.
American Studies Program

The minor in American studies is an interdisciplinary program designed to acquaint students with important features of American culture and civilization. Stressing a multifaceted approach, American studies develops analytic skills applicable to a wide range of cultural situations, past and present. The program also encourages students to combine personal and scholarly interests in a coherent group of courses chosen with the help of an adviser. Drawing upon materials and theory from economics, sociology, and political science to elucidate aspects of American culture and using literary materials to capture sense and feeling as well as facts, the student learns to view human problems in the context of a national culture.

All American studies minors must be drawn up in consultation with a member of the American Studies Committee. They will be countersigned by the program director as well as the adviser in the major field. Plans should be made as early as possible in the student's career so that the problems encountered with prerequisites in interdisciplinary work can be anticipated and avoided.

The minor consists of at least 21 hours. Three courses (9 hours) must be upper-level. All students must take American Studies 201, American Studies 401, and one course each in American history and literature. Exceptions to these requirements are subject to approval by the American Studies Committee. No course may appear in both the major and the American studies minor on the student's AOC form. AMS 201 is an introduction to concepts of the program and should be taken at the beginning of the minor. AMS 401 is a senior seminar designed to draw together the themes of the interdisciplinary work in group discussion and is part of the senior year's work.

Each minor program developed by a student and faculty adviser will reflect a core theme or interest area of the student. Programs can be planned by drawing from the variety of courses in the catalog concerning aspects of American civilization. Advisers can provide students with a summary list of such courses and can discuss model programs that illustrate ways in which appropriate minors can be designed. To cite only two among many possible cluster patterns, a student interested in an American studies minor with focus on the culture and civilization of the South may consider combining AMS 201, EH 331, HY 221 or 222, AMS 401, and three electives chosen among such courses as SOC 333, EH 432 or 433, HY 370 or 414, and PSC 223. A student interested in twentieth-century American civilization and culture may include AMS 201, EH 331, HY 222, AMS 401, and three electives chosen among EH 420, 421, 431, or 339, ARH 304, HY 370 or 438, PSC 323, 318, or 307, and EC 341.

American Studies (AMS)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>201</td>
<td>Introduction to American Studies</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Concepts and methods involved in the interdisciplinary study of American culture through analysis of a central theme in the American experience. Spring term; requirement for all minors. Prerequisite: sophomore standing.</td>
<td></td>
</tr>
<tr>
<td>301</td>
<td>Special Topics in American Studies</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Elective offering by members of constituent departments in American Studies and approved by the American Studies Committee. Focus of each course upon a specific period or topic and its meaning and significance in an interdisciplinary framework. Prerequisite: AMS 201 or permission of instructor.</td>
<td></td>
</tr>
</tbody>
</table>
401 Seminar in American Studies 3 hrs.
Seminar. Themes studied in the minor, subject matter to vary depending upon interests and program of students in each year’s class. Prerequisite: senior standing and a minor in American studies.
Art and Art History Department

Associate Professors Crouse, Dempsey, Pope (acting chairman); Assistant Professors Kromm; Adjunct Assistant Professors Mikell, Milberger.

The Department of Art and Art History is an institutional member of the College Art Association and the Southeastern College Art Conference. The UAH chapter of Kappa Pi, international art honorary fraternity, is Epsilon Tau. The student art club is FOCAL.

The art program provides both the depth and breadth necessary for a background in graduate work in art, a professional career in art and cultural enrichment, enabling UAH visual art graduates to compete with graduates from institutions offering the Bachelor of Fine Arts degree.

The art curriculum is multifaceted, providing the possibility of teacher certification as well as a variety of programs leading to the baccalaureate degree. The department also offers courses intended either as introductory or skill-enhancing experiences in the art discipline. The Bachelor of Arts degree requires specialization in either art history or the studio arts. The art history curriculum, which prepares students for graduate work or museum-related careers, examines the various styles found in western art, emphasizing their relation to both personal experiences and cultural contexts. The studio curriculum includes a core program followed by two years of upper division work offering either breadth and/or depth in the following concentrations: advanced design, communication graphics, drawing, interior design, painting, photography/film, printmaking and sculpture.

The communication graphics concentration consists of courses in advertising layout, typographic and lettering design and commercial art processes. A free informative booklet, "Careers in Communication Graphics," is available on request from the Department of Art and Art History. The interior design concentration is intended for persons preparing for work in this profession. The curriculum includes basic design, design analysis, and residential and commercial space planning. Technical development includes the basic knowledge of architectural structural planning, building equipment and components, textiles, specifications, professional boards and ethics.

Previous art experience or aptitude is not a requirement for admission to the core program courses, and should not be considered critical factors for success in those courses.

All of the studio courses require supplies to be secured by the student along with a lab fee. Students who have funded support should include an amount for supplies and fees in their request. Since most studio courses do not require textbooks, the overall cost to the student is reduced to this extent.

An art student transferring to UAH from another institution must submit information on previous training and representative samples of his art work to the art faculty for evaluation before registration. Advanced placement in art courses will be determined by the art faculty. Transfer candidates for a degree with a specialty in art must take at least 12 semester hours of art courses numbered 300 or above at UAH. A student having a minor in art must take at least 6 semester hours at UAH.

Selected examples of student art work may be retained for inclusion in the permanent collection of the UAH Gallery of Art.
Students majoring in other departments are encouraged to consider various level art courses as electives. Development of one’s human faculties and understanding through art is universally recognized. Although all art courses are open to any UAH student, ARH 109 and ARS 110 have been especially conceived for the non-art major.

I. Area of Concentration (AOC) with Art Major

Four basic patterns have been established for the degree candidates in art. They are:
1. The Studio Discipline
2. The Art History Discipline
3. The Studio Discipline with Teacher Certification
4. The Art Program for the Exceptional Student

1. The Studio Discipline

The program consists of a lower-division foundation core curriculum of ten courses which is designed to provide the basic vocabulary and syntax of the visual art language. The upper-division format composed of eight courses offers the student the option of selecting a program of broad studio experiences or specializing within a discipline. It is strongly advised that no more than two studio courses be taken in any one term.

Freshman—Sophomore Core Art Requirements
(30 semester hours or 24 semester hours when ARH 100 or ARH 101 are included in the cluster or minor).

A. ART STUDIO Requirements
ARS 120—Two-Dimensional Form in Design 3 hrs.
ARS 121—Color in Design 3 hrs.
ARS 140—Three-Dimensional Design 3 hrs.
ARS 150—Photography for Drawing and Design 3 hrs.
ARS 160—Introduction to Drawing 3 hrs.
ARS 240—Introduction to Sculpture 3 hrs.
One of the following:
ARS 262—Intermediate Drawing: Light on Dark 3 hrs.
ARS 263—Intermediate Drawing: Collage 3 hrs.
ARS 267—Drawing and Rendering for Illustration
and
ARS 280—Introduction to Printmaking 3 hrs.

B. ART HISTORY—Both Courses Required
ARH 100—Art History Survey: Ancient to Renaissance 3 hrs.
ARH 101—Art History Survey: Renaissance to Modern 3 hrs.
There are no prerequisites for ARH 100 and 101, ARS 120, 121, 140, 150, and 160 which introduce the student to the basic concepts and skills regarding the visual arts.

Students planning to specialize in the interior design discipline are required to complete ARS 267.

**Junior Level**

*(15 semester hours)*

Five courses are required at the 300-level with no more than three courses to be taken in any one studio discipline. A student may elect to specialize in one discipline by taking three courses in that discipline.

**Interior Design**—ARS 310, ARS 311, and ARS 312

**Advanced Design**—ARS 320, ARS 321, and ARS 322

**Communication Graphics**—ARS 330, ARS 331, and ARS 332

**Sculpture**—ARS 340, ARS 341, ARS 342, ARS 343, and ARS 344

**Photography/Film**—ARS 350, ARS 351, and ARS 352

**Drawing**—ARS 360, ARS 361, and ARS 362

**Painting**—ARS 373, ARS 375, ARS 376, and ARS 377

**Printmaking**—ARS 380, ARS 381, ARS 382, ARS 383, and ARS 387

**Other**—ARS 390

To fulfill Junior level 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.

**Senior Level**

*(9 semester hours)*

Senior level courses are too be taken only after the successful completion of a minimum of three 300-level studio courses or proper prerequisites. No other studio courses should be taken while completing senior requirements.

Students electing to specialize in communication graphics must complete ARS 430, 431, and 432 which may be taken in any sequence, provided proper prerequisites are satisfied.

Interior design specialists must complete ARS 410, 411, and 412 in numerical sequence.

All other studio students must complete ARS 400, 401, and 402 which may be taken in any sequence.

**Total Number of Hours:**

54 semester hours or 48 semester hours when ARH 100 and 101 are included in the minor or cognate studies.

2. **Art History Discipline**

Lower Division Program (27 semester hours)—During the first year ARH 100 and ARH 101 should be completed. Three courses at the 300 level should be completed during the second year. During the first two years 12 hours of studio courses (4) should be selected in consultation with the art history adviser. These courses must include at least three courses at the 100 level from three different studio disciplines.
Upper Division Program (18 semester hours)—During the junior year three additional art history courses at the 300 level should be completed. Three courses in art history at the 400 level or above should be completed during the senior year. A 21 hour minor or group of cognate studies is required. All courses for the minor or cognate studies must be taken outside of the Department of Art and Art History.

3. Studio Discipline with Teacher Certification

The program for teacher certification available to art degree candidates offers the qualifications for teaching art in Alabama's nursery through secondary schools. The general education requirements for certification differ from those of the preceding programs. The student should consult the catalog description for the Department of Education and Developmental Learning for the specifics for the GER, professional courses, and information relevant to the program outlined below.

Required Studio Courses:
ARS 120 Two Dimensional Form in Design
ARS 121 Color in Design
ARS 140 Three Dimensional Design
ARS 160 Introduction to Drawing
ARS 240 Introduction to Sculpture
ARS 261 Intermediate Drawing: Fluid Media
ARS 280 Introduction to Printmaking
ARS 375 Traditional Oil Painting Techniques
ARS 380 Printmaking: Intaglio

or
ARS 382 Printmaking: Relief
ARS 383 Screenprinting

Advised Electives (choose one)
ARS 150 Photography for Drawing and Design
ARS 351 Photography: Audio-Visual and Film Application
ARS 376 Contemporary Painting Approaches

(choose one)
ARS 340 Sculpture: Additive Process
ARS 344 Sculpture: Carving

Required Art History Courses:
ARH 100 Art History Survey: Ancient to Renaissance
ARH 101 Art History Survey: Renaissance to Modern

Advised Electives (choose three)
ARH 300 Colonial & 19th Century American Art
ARH 301 Classical
ARH 302 Medieval
ARH 303 Renaissance
ARH 304 Twentieth Century Art
4. Art Program for the Exceptional Student

This program is for individuals who wish to meet the exacting demands of graduate study and for students of exceptional ability and commitment. Students who wish to enter this program must receive the consent of the department chairman not later than three terms before graduation.

The program requires 6 additional hours beyond requirements for graduation and may be accomplished three ways: (a) honors project in studio leading to a solo exhibition during the senior year (ARS 490 and 491); (b) honors project in art history leading to the presentation of a research paper at a seminar meeting during the senior year (ARH 490 and 491); (c) 6 additional semester hours of work in art history scheduled by a studio specialist or 6 additional hours work in studio scheduled by an art history specialist.

II. Minors and Cognate Studies Programs

1. Art History Cognate for the Studio Discipline
   A total of 21 hours is required.
   Required courses: ARH 100 and ARH 101. A minimum of three (3) art history courses at the 300-level or above are required. Two courses in related disciplines must be selected, to be approved by the departments concerned.

2. Art for Second Area of Study (with Elementary Education)
   A total of 21 hours is required.
   Required courses: ARS 120, ARS 121, ARS 140, ARS 160 and ARS 280
   Choose two courses: ARS 382, ARS 383, ARS 375, ARS 376, ARS 343 or ARS 344. ARH 100 or 101 should be taken to fulfill the general studies requirement for the Elementary Education program.

3. Art Minor for Non-Art Majors
   Any student majoring in another area but desiring to pursue a minor in art is encouraged to do so regardless of previous experience or perceived aptitude. The program must total 21 semester hours of which 6 must be at the 300-level. The minor program will be tailored to best served the needs and interests of the student; however a typical studio-oriented minor would be as follows: ARH 100 or ARH 101, two 100-level studio courses, two 200-level studio courses and two studio courses at the 300-level or above. A typical art history minor would consist of ARH 100 and ARH 101 with four more art history courses chosen from the 300- and 400-level. One 100-level studio course is required.

UAH Gallery of Art

The UAH Gallery of Art is housed in what was originally the Union Chapel of Hazel Green, Alabama. The building in the Greek Revival Style, originally erected circa 1840 was donated to the university by Mr. and Mrs. Franklin Bendall in 1973. It was relocated to the UAH campus and is situated between Morton Hall and the University Center adjacent to Bicentennial Park. The gallery is operated with the assistance of a student staff.

Exhibitions have included art nouveau glass, nineteenth century photographs, Victorian leaded glass windows, sculpture in a variety of media, prints and paintings, the state juried exhibition, fiber arts and laser works. A section of the gallery is set aside for exhibition of students' work. Additional exhibition space is available in the University Center.
UAH Visiting Artist Series
The Department of Art and Art History sponsors campus visits of local, regional, national, and internationally renowned artists, critics, and art historians. Presentations include studio and classroom sessions as well as public lectures.

The FOCAL Exhibition
The UAH student art organization, FOCAL, in conjunction with the Department of Art and Art History sponsors a biennial regional juried exhibition for college art students of the southeastern states. The exhibition is displayed in the UAH Gallery of Art.

Art Studio (ARS)

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>110</td>
<td>Art Encounters for the Non-Artist</td>
<td>3 hrs.</td>
<td>A medley course of workshops, demonstrations, illustrated lectures, field trips, and panel discussions in studio and academic art areas, such as sculpture or painting processes, printmaking, graphic design, and art criticism. Lab fee: Level 2.</td>
</tr>
<tr>
<td>120</td>
<td>Two-Dimensional Form in Design</td>
<td>3 hrs.</td>
<td>Fundamentals of handling and understanding two-dimensional design. Lab fee: Level 2.</td>
</tr>
<tr>
<td>121</td>
<td>Color in Design</td>
<td>3 hrs.</td>
<td>Physiological, psychological, and physical properties of color with studio work in subjective and objective evaluation of color usage. Lab fee: Level 2.</td>
</tr>
<tr>
<td>140</td>
<td>Three-Dimensional Design</td>
<td>3 hrs.</td>
<td>Introduction to three-dimensional imagery and processes through investigation and handling of form in space, providing a broad design base upon which students can build toward any art or design program. Lab fee: Level 2.</td>
</tr>
<tr>
<td>150</td>
<td>Photography for Drawing and Design</td>
<td>3 hrs.</td>
<td>Understanding and practice of photography through its use as a creative drawing and design medium. It is not necessary to own photographic equipment. Lab fee: Level 2.</td>
</tr>
<tr>
<td>160</td>
<td>Introduction to Drawing</td>
<td>3 hrs.</td>
<td>Basic drawing skills and self expression using a variety of traditional and contemporary media including pencil, chalk, charcoal, inks, collage. Lab fee: Level 2.</td>
</tr>
<tr>
<td>215</td>
<td>Art for Elementary Teachers</td>
<td>3 hrs.</td>
<td>Art 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 2.</td>
</tr>
<tr>
<td>240</td>
<td>Introduction to Sculpture</td>
<td>3 hrs.</td>
<td>Introduction to basic sculptural concepts and materials. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>250</td>
<td>Intermediate Photography</td>
<td>3 hrs.</td>
<td>Personal exploration of photography as a fine arts medium with emphasis on production of art works. Course does not satisfy departmental core requirements. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>260</td>
<td>Intermediate Drawing: Dark on Light</td>
<td>3 hrs.</td>
<td>Study and practice of two-dimensional form and expression through the use of traditional means of line, value, texture, composition, perspective, scale, etc. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.</td>
</tr>
</tbody>
</table>
261 Intermediate Drawing: Fluid Media 3 hrs.
Use of inks, washes, oils, gouache, airbrush, batik, and related media. These unpredictable media typically lend themselves to freshness and spontaneity. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100 level or approval of instructor.

262 Intermediate Drawing: Light on Dark 3 hrs.
Use of light drawing materials (charcoals, pastels, scratch-board) with emphasis on representation and nonlinear perspective. Recommended as preparation for oil painting. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.

263 Intermediate Drawing: Collage 3 hrs.
Personal drawing approaches which involve assembling pre-existing visual materials. Recommended for developing skills in handling color, form, texture and theory. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.

267 Drawing and Rendering for Illustration 3 hrs.
Drawing techniques for illustration. Expressive and objective drawing styles in professional media. Freehand sketching, perspective studies, rendering techniques, and composition in line, form, value, and color. Required for interior design students and recommended for communication graphics discipline. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.

270 Intermediate Painting 3 hrs.
Studio practice in painting. Development of individual creative expression, through a variety of contemporary and traditional painting approaches. Course does not satisfy departmental core requirements. Lab fee: Level 2. Prerequisites: Painting and drawing experience recommended.

280 Introduction to Printmaking 3 hrs.
Basic printmaking techniques and processes used for generating ideas and images. Monoprint, collagraph, and nontraditional approaches to printmaking. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and two studio courses at the 100-level or approval of instructor.

Upper Division

310 Introduction to Interior Design 3 hrs.
Basic design terms and styles of furniture. Introduction to design principles; furniture arrangements; elements of color, window treatments, accessories and lighting, consumer buying of furniture and floor and wall coverings. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

311 Applications of Interior Design 3 hrs.
Principles and practices of interior design; activities and space planning; color schemes and theory; interior materials and design of major interior elements. Designing and developing the floor plan or the entire house including basic materials and furniture arrangement; exterior design and cost factors. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

312 Interior Design: Introductory Architectural Planning 3 hrs.
Survey of architectural planning and drawing, primarily as these topics relate to interior decoration. Basic drawing and sketching; planning processes for home and light-commercial buildings; construction materials; elements of construction methods; introduction to preparation of architectural drawings. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

320 Advanced Design Workshop I 3 hrs.
Design projects with emphasis on the currency of design methods, materials and ideas. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.
<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>321</td>
<td>Advanced Design Workshop II</td>
<td>3 hrs.</td>
<td>Creation of original works utilizing approaches related to the students' previous design experiences. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>322</td>
<td>Advanced Design: Calligraphy</td>
<td>3 hrs.</td>
<td>Handwriting as an art. An introduction to calligraphy designed for the beginning student. Instruction and practice in the writing styles; tools and techniques of the roman, medieval and renaissance scribe. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>330</td>
<td>Fundamentals of Advertising Design</td>
<td>3 hrs.</td>
<td>Introduction to the tools, techniques, and practices of the professional artist in the advertising agency. Preparation of art and photography for reproduction in newspaper and magazines. Functional lettering techniques. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>331</td>
<td>Advertising and Typographic Design</td>
<td>3 hrs.</td>
<td>Instruction in the basic skills required of the contemporary graphic designer. Trademark and corporate identity programs. Preparation of full color comprehensives and camera ready art. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>332</td>
<td>Illustration in Black and White</td>
<td>3 hrs.</td>
<td>The design and production of one color art for the print media using gouache ink, ink wash, pencil and other commercial drawing materials. Advanced illustrational and rendering techniques. Practical experience in preparing illustrations for publication by offset lithographic reproduction. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>340</td>
<td>Sculpture: Additive Process</td>
<td>3 hrs.</td>
<td>Emphasis on the creation of original work using additive sculptural processes and materials. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>341</td>
<td>Sculpture: Subtractive Process</td>
<td>3 hrs.</td>
<td>The creation of original work through the sculptural use of subtractive processes and materials. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>342</td>
<td>Sculpture: Casting</td>
<td>3 hrs.</td>
<td>Approaches to the production of cast sculpture. Casting in various materials, such as plaster, thermoplastics, or metals. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>343</td>
<td>Sculpture Workshop</td>
<td>3 hrs.</td>
<td>Extension and exploration of sculptural processes related to students' previous experience in areas in which some competence has been developed. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>344</td>
<td>Sculpture: Carving Workshop</td>
<td>3 hrs.</td>
<td>Emphasis on the creation of original works through the carving of wood and stone. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
<tr>
<td>350</td>
<td>Advanced Photography</td>
<td>3 hrs.</td>
<td>Advanced use of black/white and color photography as a fine art. Emphasis on personal expression. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.</td>
</tr>
</tbody>
</table>
Photography: Audio-Visual and Film Applications 3 hrs.
Individual and group production of video, movie and slide dissolve projects. Field trips to professional productions facilities assure familiarity with current developments. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Non-Silver Photography 3 hrs.
Investigation and use of alternative processes such as gum-bichromate, xerography and related media to produce works of photographic art. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Advanced Drawing 3 hrs.
Drawing with both traditional and contemporary methods and materials encouraging the development of personal expression. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Advanced Drawing with Fluid Media 3 hrs.
The development of personal expression through the use of inkwash, airbrush, oil grisaille and other related techniques. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Figure Drawing 3 hrs.
Drawing from the live model with both traditional and contemporary methods and approaches. Lab fee: Level 2. Prerequisites: ARH 100 or 101 and 3 studio courses at the 100-level or approval of instructor.

Painting 3 hrs.
Painting in various media of the individual’s choice. Suitable approaches in relation to characteristics of media used. Some previous introductory work in drawing or painting desirable. Credit not applicable to requirements for major in the painting discipline. Lab fee: Level 2.

Traditional Oil Painting Techniques 3 hrs.
Essentially representational painting with techniques ranging from under-painting and glazing to alla-prima oils. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Contemporary Painting Approaches 3 hrs.
Direct personal expression on canvas, through both spontaneous and deliberate handling of acrylic tempera and other painting media. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Painting with Mixed and Non-Traditional Media 3 hrs.
Individual expression involving use of mixed wet and dry materials, assemblage, collage, shaped and contoured canvasses and related media. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Printmaking: Intaglio 3 hrs.
Beginning studio practice in etching, engraving, aquatint, and dry-point. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Printmaking: Stone Lithography 3 hrs.
Beginning studio practice in autographic and photographic lithography processes. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Printmaking: Relief 3 hrs.
Beginning studio practice in relief-print media, utilizing woodcut, wood-engraving, linoleum-related relief techniques. Hand and mechanical press usage. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.
383 Printmaking: Screenprinting 3 hrs.
Introduction to silkscreen processes, including the latest professional handcut film and photographic methods. Recommended for communication graphics students. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

387 Printmaking: Aluminum-Plate Lithography 3 hrs.
Basic hand-drawn techniques and photo processes in aluminum-plate lithography. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

390 Mixed Media 3 hrs.
Study and practice of art approaches which combine elements of various art forms such as design, painting or photography/film and may include elements otherwise foreign to the visual arts, such as theatrical or industrial processes and materials. Lab fee: Level 3. Prerequisites: ARH 100 or 101 and three studio courses at the 100-level or approval of instructor.

Senior level studio courses are to be taken only after the successful completion of a minimum of three 300-level studio courses or the proper prerequisites. Communication graphics specialists must complete ARS 430, 431, and 432 which may be taken in any sequence. Interior design specialists must complete ARS 410, 411 and 412. ARS 411 and 412 must be completed in sequence. All other studio students must complete ARS 400, 401 and 402 which may be taken in any sequence; however, no other studio courses should be attempted while completing these courses.

400 Senior Problems in Studio Art: Lab fee: Level 2 3 hrs.
401 Senior Problems in Studio Art: Lab fee: Level 2 3 hrs.
402 Senior Problems in Studio Art: Lab fee: Level 2 3 hrs.

One section of this latter series will be offered each term, and will be conducted by a different member of the studio faculty. Each of these senior level courses will consist of the production and critical evaluation of exhibition quality works in any medium for which the student is qualified by previous experiences (100 through 300 levels).

410 Textiles in Interior Design 3 hrs.
Textiles; emphasizing fibers, yarns, fabric construction, and finishes in relation to use, serviceability and care in residential and commercial applications. Lab fee: Level 2. Prerequisite: Upper division standing.

411 Interior Design: Advanced Residential and Commercial Design 3 hrs.
Advanced development of skills in residential and commercial planning and drawing relating to interior design. Development of residential and commercial floor plans, kitchen fixture planning, bathroom and restroom facilities, restoration, fire code material resistance, lighting specifications, space planning and presentation techniques. Lab fee: Level 2. Prerequisites: ARS 310, 311, 312 and 410.

412 Advanced Application of Interior Design Principles 3 hrs.

132

Type design fundamentals. History and practice of typography. Advanced layout and design techniques for four color publications. Preparation of portfolio projects. Lab fee: Level 2. Prerequisite: ARS 331.

Design and execution of full color art for reproduction. Professional airbrush painting techniques for rendering and illustration. Four color art reproduction processes. Lab fee: Level 2. Prerequisite: ARS 332.

490 Honors Project 3 hrs.
Independent work in studio leading to a solo exhibition. Course must be followed by ARS 491.

491 Honors Project 3 hrs.
Independent work in studio leading to solo exhibition in last term of senior year. Prerequisite: ARS 490.

495 Technical Problems 3 hrs.
Technical problems in studio disciplines for which advance courses are not available. Course can be repeated for a total of 6 hours credit. Prerequisites: Advanced standing in studio disciplines concerned and permission of instructor.

Art History (ARH)

100 Art History Survey: Ancient to Renaissance 3 hrs.
Major monuments, periods and movements in the history of art from the caves of Lascaux to the revival of classical art in Renaissance Italy. Fundamentals of art historical inquiry.

101 Art History Survey: Renaissance to Modern 3 hrs.
Designed to acquaint the student with developments in art since the Renaissance. Major themes, artists and critical issues will be examined.

109 Art Appreciation for Non-Majors 3 hrs.
This course will examine the work of art as object, image and idea, its physical, formal, and intellectual aspects. Material covered will include drawing, painting, sculpture, printmaking, photography and architecture.

Upper Division

300 Colonial and Nineteenth Century American Art 3 hrs.
American art, architecture and design prior to World War I. Emergence of a national style and its relationship to European art. Prerequisites: ARH 100 and 101 or approval of instructor.

301 Classical Art 3 hrs.
Art and architecture of the ancient world to rise of Christianity and decline of the classical world. Prerequisites: ARH 100 and 101 or approval of instructor.

302 Medieval Art 3 hrs.
The rise of art in the Western world. Topics covered will include Early Christian, Byzantine, Carolingian, Ottonian, Romanesque, and Gothic art and architecture. Prerequisites: ARH 100 and 101 or approval of instructor.
303 Renaissance Art 3 hrs.
The art of Europe from 1250 to 1527. The rise of the artist as a creative individual, and his expanding role in society. The works of such northern and southern masters as Van Eyck, Durer, Da Vinci, Michelangelo, and Titian will be studied. Prerequisites: ARH 100 and 101 or approval of instructor.

304 Twentieth Century Art 3 hrs.
A survey of the developments in Europe and America from 1890 to World War II. Major movements including Cubism through Dadaism and Surrealism, to abstract expressionism. Prerequisites: ARH 100 and 101 or approval of instructor.

305 Contemporary Art and Issues 3 hrs.
Major movements since World War II, including abstract expressionism, color field painting, pop art, conceptual art, minimalism, earthworks, performance art and video, new realism and photo-realism, neo-expressionism and graffiti. Prerequisites: ARH 100 and 101 or approval of instructor.

306 Baroque and Rococo Art 3 hrs.
Development of baroque and rococo art in Europe. Architecture of Borromini, sculpture of Bernini, painting of Rubens, Rembrandt, Velasquez, Poussin, and Watteau will be examined. Prerequisites: ARH 100 and 101 or approval of instructor.

309 The History of Design 3 hrs.
A survey of the historical development of European and American interior design styles including Victorian, the Arts and Crafts Movement, Art nouveau, the Bauhaus, and contemporary trends. Prerequisites: ARH 100 and 101 or approval of instructor.

310 Nineteenth Century Art in Europe 3 hrs.
Survey of developments in art from 1780 to 1890: neo-classicism, romanticism, realism, impressionism and symbolism will be studied through the works of such artists as David, Goya, Courbet, Van Gogh and others. Prerequisites: ARH 100 and 101 or approval of instructor.

320 Leonardo da Vinci and Michelangelo: Special Topics in Renaissance Art 3 hrs.
A close look at the careers of two major geniuses of the Renaissance, considering all works of art as well as scientific investigations in the case of Leonardo, and the poetry of Michelangelo. Prerequisites: ARH 100 or 101, or approval of the instructor.

322 Impressionism: Special Topics in Nineteenth-Century Art 3 hrs.
The contribution of nineteenth-century French artists who pioneered a new style based on an interest in light and other optical effects. Prerequisites: ARH 100 or 101 or approval of instructor.

325 Kandinsky and Mondrian: Special Topics in Modern Art 3 hrs.
The genesis of abstraction in modern art through the images and theoretical writings of Kandinsky & Mondrian. Prerequisites: ARH 100 or 101 or approval of instructor.

Senior-level courses involve independent initiative of the degree candidate. The student should have completed all foundation courses and all GER before commencing senior program.

ARH 400, 401 and 402 include discussion and guided research on artists, works of art, and subjects closely related to art.

400 Art History Seminar: Renaissance and Baroque Art 3 hrs.
Methods of developing a scholarly research paper. Prerequisites: Upper division standing and ARH 303 and 306 or approval of instructor.

401 Art History Seminar: Modern Art 3 hrs.
Methods of developing a scholarly research paper. Prerequisites: Upper division standing and ARH 304 and 310 or approval of instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>402</td>
<td>Art History Seminar: American Art</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Methods of developing a scholarly research paper. Prerequisites: Upper division standing and ARH 300 and 304 or approval of instructor.</td>
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<tr>
<td>403</td>
<td>Trends in Post-1945 Art</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Contemporary developments in the visual arts. Prerequisites: Upper division standing and ARH 304 or approval of instructor.</td>
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<tr>
<td>404</td>
<td>Art History Seminar: Methods in Art History</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Important theoretical and critical writings on visual arts to acquaint the advanced student with the history of art historical thought and methodology. Prerequisites: Upper division standing and one 300-level ARH course or approval of instructor.</td>
<td></td>
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<tr>
<td>405</td>
<td>Art History Seminar: History of Women Artists</td>
<td>3 hrs.</td>
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<td></td>
<td>An attempt to answer the query, &quot;Why have there been no great women artists?&quot; The works of such artists as Gentileschi, Kauffmann, Cassatt, and O'Keefe, in the context of women's role in Western society from the Middle Ages to the present. Prerequisites: Upper division standing and two of the following: ARH 304, 306, 310 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>490</td>
<td>Honors Project</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Independent study in art history leading to the presentation of a research paper at a seminar meeting. Course must be followed by ARH 491.</td>
<td></td>
</tr>
<tr>
<td>491</td>
<td>Honors Project</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Independent study in art history leading to the presentation of a research paper at a seminar meeting during the senior year. Prerequisite: ARH 490.</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>Special Problems in Art History</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Directed reading and research. Prerequisites: Advanced standing, 12 semester hours of art history, previous course work in area to be studied, and approval of the instructor.</td>
<td></td>
</tr>
</tbody>
</table>
Education and Developmental Learning Department
Professor Wharry; Professor Emeritus Engle; Associate Professors Brindley, Gibson, Kilgo; Adjunct Associate Professors Kirkpatrick; Assistant Professors Butts (chairman), Piersma; Adjunct Instructors Bell, McHugh.

Graduate and undergraduate programs in both Education and Developmental Learning are offered by the department. The department coordinates the composite major in Human Growth and Development.

Undergraduate Study in Education
Students in the School of Arts, Humanities, and Social Sciences, The School of Science or the School of Administrative Science, who wish to qualify for the Alabama Class B Elementary, Middle, High School or N-12 professional teachers certificate must meet the requirements as set forth below. Students who choose to major in teacher education and qualify for teacher certification should contact the chairperson of the Department of Education to be assigned an adviser as early as the freshman year. Students must also consult advisers from other approved academic departments to coordinate planning of programs of study. The N-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 2.20 on all work attempted, (2) have completed at least 70% of the GER (3) have presented acceptable confidential evaluations prepared on proper forms, (4) have satisfactory performance on the Alabama State Department of Education English Language Proficiency Test, (5) have satisfactory interview(s) with representatives of the Department of Education, and (6) have a minimum score of 16 on the ACT taken within five years prior to admission or equivalent SAT scores. Students may elect to be re-examined on all tests. All students admitted to the program will have a teacher education adviser assigned to them, as well as an adviser in the teaching field(s). Students who entered collegiate study prior to June 1, 1977, may have items (4) and (6), as listed above, waived.

Application for Student Teaching
Before April 15 of the junior year, students admitted to the teacher education program should make application for a student teaching/internship assignment for one term of the senior year. The following additional criteria must be met before the internship assignment is made; (1) a GPA of 2.2 on all work attempted, and in all work attempted in the teaching field(s), (2) a GPA of 2.2 in all work attempted in education courses, and (3) satisfactory completion of all appropriate GER.

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 at the Office of Admissions and Records or the Education Department office.
To be recommended for the teaching certificate a student, in addition to fulfilling the general degree requirements must satisfactorily complete an approved
program with at least a 2.20 GPA on all work attempted and at least a 2.20 GPA on all work attempted in the teaching field(s) and in professional education. Additionally, the student must pass the State Department of Education Initial Teacher Certification Testing Program.

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.

**Elementary Education**

The curriculum in elementary education provides a broad liberal education base and professional studies, including 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 his/her goals as early as possible. The student will be assigned an adviser 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**

- English Composition (EH 101-102) .................................................. 6
- Literature (EH 205 and EH 230) .......................................................... 6
- Speech (CM 110, 113, or 214) or Fine Arts, Linguistics, or Philosophy ...... 3
- HY 101-102 or 391-392 .............................................................. 6
- MFL (any one)—Spanish, German, French, Russian, etc. (6-9 hrs if advanced placement) .............................................................. 12
- Social Sciences ................................................................. 6
  - Economics (EC 142, 143, 235, 341, or 344) (3 hrs. req.)
  - 2nd Social Science: Economics, Sociology, Psychology, or Political Science—3 hrs.-6 hrs.
- Sciences ................................................................. 12
  - Biology (8 hrs), plus a physical science (4 hrs) or vice versa* or Natural Science 111, 112, 113 (12 hrs.)
- Mathematics ................................................................. 3
  - MA 104 or 105 or 3 hrs. at level of placement.
- HPE (Inc. 190 CPR—1 hr., or 194 Nutrition—1 hr., P.E. activity 1-2 hrs.) .... 3
ARS 215 (Art for Elementary Teacher) ........................................... 3
MU 215 (Music for Elementary Teacher) ........................................ 3
ED 215 (P.E. for Elementary Teacher) ........................................... 3

Major

Area of Concentration—ELEMENTARY EDUCATION
ED 230 Human Development ....................................................... 3
ED 261 Foundations of Education ................................................. 3
ED 263 Educational Psychology .................................................. 3
ED 300 Group Processes ............................................................. 3
ED 360 Diagnostic & Prescriptive Teaching .................................. 3
ED 372 Teaching Elementary Social Studies .................................. 3
ED 373 Teaching Elementary Science ........................................... 3
ED 374 Teaching Elementary Mathematics ................................... 3
ED 375 Teaching Elementary Reading .......................................... 3
ED 371 Language Arts or
ED 400 Literature for Children and Adolescents .......................... 3
ED 408 Teaching Reading in the Content Area ................................ 3
ED 493 Student Teaching ........................................................... 9
ED 593 Educating Exceptional Child & Youth ................................ 3

Minor

Cognate Area (Sociology, Psychology, Mathematics, History, English, etc.)
18 hrs. minimum (most are 21-24 hrs.) which must include 15 hrs. 300-or-above
level courses.

*See counselor/adviser in Education Department for details on options and
requirements in these categories.

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 School of Arts, Humanities and Social Sciences are: art, English,
history, French, German, Russian, Spanish, music, political science, psychology
and sociology. Approved programs in the School of Science are: biology, chemistry,
mathematics and physics. Economics is an approved program in the School of
Administrative Science. Other cognate fields may be approved by petitioning for
special considerations.

Middle/Junior High School Education
The curriculum in middle/junior high school education is planned to provide a
broad liberal base, professional studies in middle school education, and an
in-depth study of two disciplines or of selected comprehensive fields (social
science, language arts or general science) to prepare teachers for serving in
traditional junior high schools or the emerging middle schools. Students may, at
their option, add certification in an adjacent field, i.e., high school education,
with additional coursework and internships. This program is designed to prepare
teachers especially trained in dealing with youngsters undergoing the developmen-
tal changes of late childhood, puberty, and early adolescence. The emphasis will
be on preparing academic generalists rather than specialists in subject fields.
Students should seek counseling as early as possible. Advisers 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.

Course Requirements for a Middle/Junior High School major:

**General Education Requirements**

- English Composition (EH 101-102) ........................................... 6
- Literature (EH 205 and EH 230) ........................................... 6
- Speech (CM 110, 113, or 214) or Fine Arts, Linguistics, or Philosophy .......... 3
- HY 101-102 or 391-392 ....................................................... 6
- MFL (any one)—Spanish, German, French, Russian, etc. (6-9 hrs. if advanced placement) ................. 12

- Social Sciences ..................................................................... 6
  - Economics* (EC 142, 143, 235, 341, or 344) (3 hrs. req.)
  - 2nd Social Science: Economics or Sociology or Psychology or Political Science—3 hrs.-6 hrs.

- Sciences** ........................................................................... 12
  - Biology (8 hrs.), plus a physical science (4 hrs) or vice versa* or
    Natural Science 111, 112, 113 (12 hrs.)
  - Mathematics** ...................................................................... 3
    MA 104 or 105 or 3 hrs of level of placement
  - HPE (Inc. 190 CPR—1 hr., or 194 Nutrition—1 hr., P.E. activity 1-2 hrs.) .... 3

**Major**

**Area of Concentration—**

**MIDDLE/JUNIOR HIGH SCHOOL EDUCATION**

- ED 230 Human Development ................................................... 3
- ED 261 Foundations of Education in the U.S. ................................. 3
- ED 263 Educational Psychology .................................................. 3
- ED 300 Group Processes or ED 360 Diagnostic & Prescriptive Teaching ........ 3
- ED 375 Teaching of Reading, or ED 400 Literature for Children & Adolescents ..................................................... 3
- ED 388 Teaching Middle and High School Subjects ................................ 3
- ED 408 Reading in the Content Areas ........................................... 3
- ED 490 Senior Seminar in Education .................................................. 3
- ED 495 Middle School Internship .................................................. 9
- ED 510 Foundations of Educational Evaluation ........................................... 3
- ED 593 Education of Exceptional Children and Youth .................................. 3

*See adviser in Education Department for details on options and requirements in these categories.

**For the B.S. in physics, biological sciences, or chemistry, the science and mathematics requirement is different. Seek advisement from the appropriate department.
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 total number of semester hours in a student’s program will vary from a low of some 130 hours to a high of about 145 hours, depending on the teaching field. 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 advisers from the chosen field.

Students seeking middle school certification are encouraged to consider selecting the comprehensive programs as they are felt to be the better preparation for teaching at that level.

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. Advisers 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition (EH 101-102)</td>
<td>6</td>
</tr>
<tr>
<td>Literature (EH 205 and EH 230)</td>
<td>6</td>
</tr>
<tr>
<td>Speech (CM 110, 113, or 214) or Fine Arts, Linguistics, or</td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>HY 101-102 or 391-392 (Western Civilization only)</td>
<td>3</td>
</tr>
<tr>
<td>MFL (any one)—Spanish, German, French, Russian, etc. (6-9 hrs if Advanced Placement)</td>
<td>12</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>6</td>
</tr>
<tr>
<td>Economics (EC 142, 143, 235, 341, or 344) (3 hrs. req.)</td>
<td></td>
</tr>
<tr>
<td>2nd Social Science: Economics or Sociology or Psychology or Political Science—3 hrs. 6 hrs.</td>
<td></td>
</tr>
<tr>
<td>Sciences**</td>
<td>12</td>
</tr>
<tr>
<td>Biology (8 hrs), plus a physical science (4 hrs) or vice versa* or Natural Science 111, 112, 113 (12 hrs.)</td>
<td></td>
</tr>
<tr>
<td>Mathematics**</td>
<td>3</td>
</tr>
</tbody>
</table>
MA 104 or 105—3 hrs at level of placement
HPE (Inc. 190 CPR—1 hr., or 194 Nutrition—1 hr., P.E. activity
1-2 hrs. .......................................................... 3

Area of Concentration—SECONDARY EDUCATION

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

*See adviser in Education Department for details on options and requirements in these categories.

**For the B.S. in physics, biological sciences, or chemistry, the science and mathematics requirement is different. Seek advisement from the appropriate department.

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 advisers from the chosen fields.

N-12 Education

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 education and two programs in music education (Instrumental, and Vocal/Choral). The general studies and professional studies components are slightly different from those found in the elementary, middle and high school programs. 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 advisers is strongly recommended.
Course Requirements for an Art Education Major

General Education Requirements

English Composition (EH 101-102) .........................................................6
Literature (EH 205 and EH 230) .................................................................6
ARH 100 ........................................................................................................3
HY 101-102 or 391-392 ..............................................................................6
MFL (any one)—Spanish, German, French, Russian, etc. (6-9 hrs if advanced placement) ......................................................12
Social Sciences ............................................................................................6
Economics (EC 142, 143, 235, 341, or 344) (3 hrs. req.)
2nd Social Science: Economics or Sociology or Psychology or Political Science—3 hrs.-6 hrs.
Sciences ......................................................................................................12
Biology (8 hrs), plus a physical science (4 hrs) or vice versa* or Natural Science 111, 112, 113 (12 hrs.)
Mathematics ...............................................................................................3
MA 104 or 105—3 hrs at level of placement
HPE (Inc. 190 CPR—1 hrs., or 194 Nutrition—1 hr., P.E. activity 1-2 hrs. ....3
ARS 215 .......................................................................................................3

Major

Area of Concentration—ART EDUCATION

ED 230 Human Development .................................................................3
ED 261 Foundations of Education in U.S. .................................................3
ED 263 Educational Psychology ..............................................................3
ED 388 Teaching Middle & High School Subjects ..................................3
ED 408 Teaching Reading in the Content Areas ....................................3
ED 490 Senior Seminar in Education ......................................................3
ED 499 Internship ......................................................................................9
ED 510 Foundations of Educational Evaluation ....................................3
ED 593 Education of Exceptional Children & Youth ............................3

Art:
The major in art education 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.

*See adviser in Education Department for details of options and requirements in these categories.

Course Requirements for a Music Education Major

142
General Education Requirements

English Composition (EH 101-102) ................................................................. 6
Literature (EH 205 and EH 230) ................................................................. 6
MU 110 ............................................................................................................. 3
HY 101-102 or 391-392 ................................................................................. 6
MFL (any one)—Spanish, German, French, Russian, etc. (6-9 hrs if advanced placement) ................................................................. 12

Social Sciences ................................................................................................. 6
Economics (EC 142, 143, 235, 341, or 344) (3 hrs. req.)
2nd Social Science: Economics or Sociology or Psychology or Political Science—3 hrs.-6 hrs.

Biology (8 hrs), plus a physical science (4 hrs.) or vice versa* or Natural Science 111, 112, 113 (12 hrs.)

Mathematics .................................................................................................. 3
MA 104 or 105 or 3 hrs at level of placement

HPE (Inc. 190 CPR—1 hr., of 194 Nutrition—1 hr., P.E. activity 1-2 hrs. ... 3
AHS 100 (The Art of Being Human) ............................................................ 3

Major

Area of Concentration—MUSIC EDUCATION: Instrumental or Vocal/Choral

ED 230 Human Development ................................................................. 3
ED 261 Foundations of Education in U.S. .................................................. 3
ED 263 Educational Psychology .............................................................. 3
ED 388 Teaching Middle & High School Subjects ................................. 3
ED 408 Teaching Reading in the Content Areas ..................................... 3
ED 490 Senior Seminar in Education ...................................................... 3
ED 499 Internship .......................................................................................... 9
ED 510 Foundations of Educational Evaluation .................................... 3
ED 593 Education of Exceptional Children & Youth ............................ 3
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

*See adviser in Education Department for details of options and requirements in these categories.

Music: Instrument 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.
Other Considerations

Students seeking certification in elementary, middle, high school, or N-12 education programs will have opportunity for electives by judicious planning of their general studies courses and within their major(s).

Students may substitute appropriate courses taken at another institution with permission of the Education Department if equivalency is established.

It should be noted that the requirements for the bachelor's degree will exceed 132 hours in most areas.

Multiple Certification

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 the N-3 option. 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. 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. A person beginning with a middle school program would have the option of moving to either high school endorsement or elementary school endorsement.

Changing from One Field to Another

Elementary education students who wish to extend their preparation to include endorsement in grades 7 and 8 may obtain a middle school endorsement by completing an approved program consisting of the following:

1. a course in the understanding of the purposes and design of the middle school, including its curriculum;
2. a course in the appreciation for and an understanding of the unique nature of the developing human organism during the preadolescent and early adolescent years;
3. an appropriate teaching field of at least 27 semester hours selected from those approved at UAH.

High School education students who wish to extend their preparation to include endorsement in grades 4-6 may obtain a middle school endorsement by completing an approved program consisting of the following:

1. a methods course in using instructional strategies, media, and materials, appropriate for effective teaching of preadolescents;
2. a course in the understanding of the purposes and design of the middle school as an institution, including its curriculum;
3. a course in the appreciation for and an understanding of the unique nature of the developing human organism during the preadolescent and early adolescent years;
4. a course designed for developing the knowledge and skills necessary to guide the continued growth and development of reading skills appropriate for the middle school child;
5. an appropriate teaching field major of at least 27 semester hours.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Career Exploration</td>
<td>1 hr.</td>
</tr>
<tr>
<td>115</td>
<td>Effective Reading and Study skills</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>261</td>
<td>Foundations of Education in the United States</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>263</td>
<td>Educational Psychology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>325</td>
<td>The Sociology of Education</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>411</td>
<td>Guidance for Teachers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>456</td>
<td>Mental Health in the School</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>467</td>
<td>Tests and Measurements</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>500</td>
<td>Special Problems in Education</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>502</td>
<td>Environmental Education</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>510</td>
<td>Foundations of Education Evaluation</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>549</td>
<td>Audiovisual Instruction</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>593</td>
<td>Education of Exceptional Children and Youth</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

Note: Some courses may have prerequisites mentioned in the text. For example, ED 263 or equivalent or junior standing is required for Mental Health in the School. (Same as DL 593) refers to a possible cross-listing or equivalent course.
## 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>230</td>
<td>Human Development</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Overview of human development stressing continuity from conception to adulthood. Practical applications for teachers and parents.</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>Note:</td>
<td>Ed 371 and 375 include minimum of 16 hours laboratory experience in local elementary schools.</td>
<td></td>
</tr>
<tr>
<td>371</td>
<td>Teaching Elementary Language Arts</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Current practices in language arts instruction, materials, and characteristics of students. Development of all language art skills to appropriate level. Prerequisite: ED 360.</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: ED 360.</td>
<td></td>
</tr>
<tr>
<td>373</td>
<td>Teaching Elementary Science and Health</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Examination, design, and evaluation of experiences for teaching natural sciences in the elementary school. Prerequisite: ED 360.</td>
<td></td>
</tr>
<tr>
<td>374</td>
<td>Teaching Elementary Mathematics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Examination, design, and evaluation of experiences for teaching mathematics in elementary school. Modern trends in mathematics education. Prerequisite: ED 360.</td>
<td></td>
</tr>
<tr>
<td>375</td>
<td>Teaching Elementary Reading</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Materials and methods in teaching reading with emphasis on skill and development, both developmental and remedial techniques, and planning of reading programs.</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>Literature for Children and Adolescents</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Relationship between developmental stages and literature that young people find relevant at various stages of growth. Understanding and appreciation of interdependence of experience and literature. Knowledge of the literature and critical assessment including use of library resources in teaching reading.</td>
<td></td>
</tr>
<tr>
<td>492</td>
<td>Observation and Participation in Teaching</td>
<td>3-6 hrs.</td>
</tr>
<tr>
<td></td>
<td>Selected observation and participation in elementary schools. For students in curricula designed for both elementary and secondary schools and for experienced teachers. Prerequisites: ED 230, 261, 263, 300, 360, three methods courses or equivalent approved courses, and an approved application for student teaching.</td>
<td></td>
</tr>
</tbody>
</table>
493 **Elementary School Internship** 9 hrs.
The course will focus on an apprenticeship training in a natural teaching-learning-environment. During the assignment the role of the student teacher 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 is expected to assimilate university training and on-the-site activities in order to synthesize methods and strategies for future professional use. A minimum of 75 clock hours of actual teaching is required. Prerequisite: General Education Requirements: ED 230, 261, 263, 300, 360 and three methods courses, or equivalent.

494 **Elementary School Internship** 3 hrs.
This course is essentially the same as ED 495. However, it will require a minimum of only 100 clock hours, including a minimum of some 25 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 chairman.

### Middle and High School Education

388 **Teaching Middle and High School Subjects** 3 hrs.
(Major area of teaching to be designated.) Materials and methods in the major fields. Prerequisites: ED 263 and admission to Teacher Education Program.

408 **Teaching Reading in the Content Area** 3 hrs.
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.

490 **Senior Seminar in Education** 3 hrs.
Course to be taken concurrently with student teaching. Prerequisites: ED 388 and senior standing.

495 **Middle School Internship** 9 hrs.
The course will focus 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 methods and strategies for future professional use. A minimum of 75 clock hours of actual teaching and some 300 hours overall is required. Prerequisites: all required professional educational courses should be complete before admission to the program.

496 **Middle School Internship** 3 hrs.
This course is essentially the same as ED 495. However, it will require a minimum of only 100 clock hours, including a minimum of 25 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 chairman.

497 **High School Internship** 9 hrs.
Observation and student teaching in secondary schools. Prerequisites: ED 263, 388, 408, 518 and approved application for student teaching.

498 **High School Internship** 3 hrs.
This course is essentially the same as ED 497. However, it will require a minimum of only 100 clock hours, including a minimum of some 25 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 chairman.
Other Internships

499 N-12 Internship (Art, Music)
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.

Graduate Study in Education

Master’s degrees are available in several academic areas and in certain professional areas, all leading to State of Alabama certification at the Class A level. Some options not leading to certification are also available. See the Graduate Catalog.

600 Special Problems in Education 1-3 hrs.
601 Public School Organization and Administration 3 hrs.
602 The Principal as Educational Leader 3 hrs.
603 Sources of American Educational Thought 3 hrs.
604 Contributions of Psychology to Education 3 hrs.
606 Principles of Curriculum Development 3 hrs.
608 The Educational Leader as Evaluator 3 hrs.
609 Fundamentals of Reading for Middle and Secondary Schools 3 hrs.
610 Legal Aspects of Public School Administration 3 hrs.
611 Principles of Guidance 3 hrs.
622 Modern Elementary School Programs 3 hrs.
626 Modern Middle School Programs 3 hrs.
630 Modern Secondary School Programs 3 hrs.
647, 648, 649 Field Experience Practicum 1 hr. each
Developmental Learning

In Developmental Learning programs are available at three levels:

1. A curriculum of some 60 semester hours leading to an associate certificate in Child Development.
2. A composite major in Human Growth and Development leading to a B.A. degree.
3. Five programs leading to a master’s degree in Developmental Learning.
   a. Early Childhood Education for the Handicapped. This provides Alabama Class A Certification, if desired.
   b. Learning Disabilities. This provides Alabama Class A Certification, if desired.
   c. School Psychometry. This provides Alabama Class A Certification, if desired.
   d. Developmental Processes.
   e. Early Childhood Learning.

These undergraduate programs are more specifically described as follows:

Associate Certificate in Child Development

The curriculum in child development prepares students to work in preschool programs other than those in public school. The program leads to an Associate in Child Development Certificate. Requirements for the associate certificate are as follows: (1) completion of 60 semester hours credit, including 24 to 26 hours in GER, 30 hours in the child development curriculum, and remaining hours in free electives and (2) an overall average of C in all courses attempted and all courses attempted in the child development curriculum.

Transfer students must earn at least 18 semester hours at UAH, including 6 hours in the child development curriculum and must complete 6 of the last 9 hours credit at UAH. In addition to the overall grade average, transfer students must have an average grade of C in all courses attempted at UAH.

Up to 30 semester hours of total requirements for the associate certificate may be earned by other than classroom work (e.g., CLEP, credit by examination, correspondence study, educational experiences in the armed forces, and professional certificate programs).

The GER for the associate certificate include the 24 to 26 semester hours credit as follows:

1. English Composition, 6 hours in (a) EH 101 and EH 102, or (b) CLEP English composition examination.
2. History-Social Sciences, 6 hours in (a) HY 101 and HY 102 or (b) history, sociology, psychology, political science, or economics courses or examination or (c) CLEP social sciences-history examination.
3. Science-Mathematics, 6 to 8 hours in (a) mathematics, biological sciences, physics, chemistry, or natural science courses or examination or (b) CLEP natural sciences examination or (c) CLEP mathematics examination.
4. Humanities, 6 hours in (a) EH 205 and EH 206 or (b) English, foreign languages, philosophy, music, or art courses or examinations or (c) CLEP humanities examination.

To continue studies toward the baccalaureate, students should select general education courses that will also apply toward requirements for the higher degree. In each of the above groups, courses listed as “(a)” are acceptable in most bachelor’s degree programs at UAH.
Child Development Curriculum .........................................................30 hrs.
Required ................................................................................................CD 101, CD 203
Electives. 9 hours from the following: ............................................CD 102, CD 201, 
CD 202, CD 301, CD 302

Supporting courses
Required .................................................................................................SOC 100, PY 103
Electives. 9 hrs. from the following .....................................................ARS 215, MU 215, ED 125, 
ED 230, ED 263, ED 295

Free Electives .........................................................................................4-6 hrs.

Students pursuing the certificate programs consult with an adviser and complete 
the declaration of intent form (DOI) after completion of the second course taken at 
UAH.

Composite Major With Emphasis in Human Growth and Development
The curriculum in Human Growth and Development encompasses development 
from the prenatal period through old age. It emphasizes accumulation of a general 
knowledge base and the development of skills to pursue professional goals. Career 
opportunities include positions in public and private agencies and specialized 
human service organizations. In addition, the program has special relevance for 
premed and nursing students.

A student should seek counseling upon entry into the program and select an 
adviser early in his course of study. The student must file an AOC before the end 
of his sophomore year.

The composite major in Human Growth and Development for a Bachelor of 
Arts degree will be awarded upon completion of the GER with 36 semester hours 
from the area of concentration and 21 semester hours in the minor area.

Required ..........SOC 106, AHS 300, PY 302, SOC 310, SOC 311, PY 315 
PY 316, PY 510
Electives. 9 hrs. from the following: .................................................CD 102, SOC 306, SOC 345, 
SOC/PY 375, PY 401, PY 410, PY 433, PY 506

A minor in Human Growth and Development should include a minimum of 21 
semester hours including the following:

Required .................................................................SOC 106, AHS 300, SOC 311, PY 315
Electives. 9 hrs. from the following: .................................................CD 102, PY 302, SOC 306, 
SOC 310, PY 316, SOC 345, PY/SOC 375, 
PY 401, PY 433, PY 506, PY 510

Graduate Program in Developmental Learning
For information on the graduate program in Developmental Learning, see the 
UAH Graduate Catalog.
### Child Development (CD)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Introduction to Child Development</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Physical, social, emotional, and mental development of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the young child; work functions, employment opportunities,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and responsibilities of personnel trained in child</td>
<td></td>
</tr>
<tr>
<td></td>
<td>development.</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>Child Nutrition and Health Care</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Basic information on human nutrition, nutritional value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of food, and relationship of food and food habits to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nutrition of the young child. Fundamental descriptions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of diseases and disorders of children, preventive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>medicine, emergency treatment, and care of handicapped</td>
<td></td>
</tr>
<tr>
<td></td>
<td>children.</td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>Creative Activities</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Art and simple science media for use with young</td>
<td></td>
</tr>
<tr>
<td></td>
<td>children; principles relating to choice, use, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>value of creative media in enrichment opportunities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>for children.</td>
<td></td>
</tr>
<tr>
<td>202</td>
<td>Language Development</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Development of speech and language in the young child,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>basis for language growth, language arts in preschool</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and elementary school programs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to written expression. Identification of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>speech problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prerequisite: CD 101 or permission of coordinator.</td>
<td></td>
</tr>
<tr>
<td>203</td>
<td>Teaching the Young Child</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>The pattern of child development, curriculum, learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methods, and guidance of the child from two to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nine years of age. Curricula for various types of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>preschool programs. Basic testing and evaluating the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>young child. Prerequisite: CD 101 or permission of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>coordinator.</td>
<td></td>
</tr>
<tr>
<td>301</td>
<td>Preschool Programs and Centers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Preschool programs and centers. History and philosophy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of preschool programs; legislation, standards, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>program planning. Practical aspects of financing,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>administration, supervision, management, and evaluation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prerequisite: CD 101 or permission of coordinator.</td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>Preschool Practicum</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>A structured program of observation and participation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>in a preschool center. Prerequisite: 12 semester hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>in CD courses, including CD 101.</td>
<td></td>
</tr>
</tbody>
</table>

### Developmental Learning (DL)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>593</td>
<td>Education of Exceptional Children and Youth</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>600</td>
<td>Special Problems in Developmental Learning</td>
<td>1-3 hrs.</td>
</tr>
<tr>
<td>601</td>
<td>Early Childhood Development</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>602</td>
<td>Psychopathology of Children with Learning Problems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>603</td>
<td>Sequential Development of the Human Organism</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>604</td>
<td>Adaptive Academics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>605</td>
<td>Curriculum for Early Childhood Education</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>606</td>
<td>Language Development</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>609</td>
<td>Fundamentals of Reading for Middle and Secondary Schools</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>610</td>
<td>Interdisciplinary Aspects of Intervention</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>620</td>
<td>Psychoeducational Counseling</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>625</td>
<td>Diagnostic Procedures: Advanced Psychometrics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>626</td>
<td>Diagnostic Procedures: Selected Tests for Preschoolers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Hours</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>627</td>
<td>Diagnostic Procedures: Selected Tests for School-Age Children</td>
<td>3</td>
</tr>
<tr>
<td>628</td>
<td>Human Learning Theory: Psychological, Sociological, and Neurological Foundations</td>
<td>3</td>
</tr>
<tr>
<td>629</td>
<td>Behavior Modification</td>
<td>3</td>
</tr>
<tr>
<td>630</td>
<td>Research: Methodology and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>631</td>
<td>Diagnostic Procedures: Standord-Binet, Wechsler</td>
<td>3</td>
</tr>
<tr>
<td>640</td>
<td>The Family in a Changing Society</td>
<td>3</td>
</tr>
<tr>
<td>644</td>
<td>Advanced Studies in Socialization</td>
<td>3</td>
</tr>
<tr>
<td>649</td>
<td>Individual Readings</td>
<td>3</td>
</tr>
<tr>
<td>650</td>
<td>Practicum</td>
<td>3</td>
</tr>
<tr>
<td>699</td>
<td>Master's Thesis</td>
<td>3</td>
</tr>
</tbody>
</table>
The Department of English and Communication Arts offers courses leading to the B.A. and M.A. in English, to a minor in English, and to a minor in Communication Arts with options in drama, interpersonal and organizational communication rhetoric and speech. The department also offers courses in Linguistics which students may take as electives.

English Major

The requirements for a major are 36 semester hours in addition to 6 hours of freshman composition and literature, distributed as follows:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophomore Survey (as described in GER)</td>
</tr>
<tr>
<td>Shakespeare (EH 360)</td>
</tr>
<tr>
<td>American literature (EH 330, 331, 339, 430, 431, 530, 532, 533)</td>
</tr>
<tr>
<td>Literature before 1800 (EH 380, 381, 450, 460, 470, 474, 551, 571, 572)</td>
</tr>
<tr>
<td>Literature after 1800 (EH 330, 331, 390, 391, 420, 421, 430, 492, 493, 500, 532, 533, 551, 594)</td>
</tr>
<tr>
<td>Electives</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

One course in the novel is required; additional novel courses must be counted as English electives. Six semester hours must be taken in courses numbered 400 or above. Transfer students majoring in English must take at least 12 semester hours of upper division English courses (numbered 300 or above) at UAH. No more than 3 semester hours' credit in creative writing may be applied to an English major or minor without special approval. Any English course deemed appropriate by the adviser may be incorporated into the AOC. AOC's especially for teacher certification are available from faculty advisers.

The English major as defined above will form a part of an area of concentration that must include one of the following variations: (1) A minor drawn from one discipline that includes a minimum of 21 semester hours, 6 hours of which must be numbered 300 or above, (2) a major from another discipline, (3) an area of cognate studies drawn from two or more disciplines that includes a minimum of 21 semester hours, of which 9 hours must be in courses numbered 300 or above.

At the beginning of the sophomore year, the English major should request an adviser for help in planning an AOC as early as possible.
English minor
A minor in English should include a minimum of 21 semester hours of which at least 3 hours must be taken in courses numbered 400 or above, identified as follows:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic courses (GER in composition and literature)</td>
</tr>
<tr>
<td>Shakespeare (EH 360)</td>
</tr>
<tr>
<td>Course numbered 400 or above</td>
</tr>
<tr>
<td>Electives in English</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

A student with a minor in English must take at least 6 semester hours of advanced English courses (numbered 300 or above) at UAH.

Special programs designed for English majors with an American Studies minor are available from English or American Studies faculty advisers.

Cognate Studies in Technical Writing
Preparation for a career in the growing 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 sequence. Students with non-technical majors should plan early to take courses in technical or scientific fields. Consult the Co-ordinator of Business and Technical Writing for current requirements.

English for Second Area of Study
Students majoring in elementary education may select English as their second area of study. For major requirements, see Education section.

To meet university requirements, a minimum of 18 hours, 15 of which must be upper level, are to be selected from courses listed below with the help of the Education faculty adviser and approval by the chairman of the Department of English and Communication Arts. The curriculum may require more than the minimum total of 128 hours for the degree. A typical program is:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>American literature (EH 330, 331, 339, 430, 431, 530, 532, 533)</td>
</tr>
<tr>
<td>Literature before 1800 (EH 380, 381, 450, 460, 470, 474, 551, 571, 572)</td>
</tr>
<tr>
<td>Literature after 1800 (EH 330, 331, 390, 391, 420, 421, 430, 492, 493, 500, 532, 533, 551, 594)</td>
</tr>
</tbody>
</table>

Communication Arts Minor
A minor in communication arts must include a minimum of 21 semester hours of which at least 9 hours must be taken in courses numbered 300 or above. The minor incorporates a core of four courses (CM 113, 130, 431, and either 322 or 309), and three additional courses. Broadcasting courses are available through the UAH-A&M Visiting Student Program.

Appropriate communication arts courses may also be used to form part of a program of cognate studies with other disciplines. For example, persons majoring in any of the administrative science disciplines (e.g., accounting, finance, man-
agement, marketing, or procurement) may elect courses drawn from those in interpersonal and organization communication to tailor a program combining technical/professional expertise with communication competencies and skills. Persons majoring in any of the humanities (e.g., English, history, political science, sociology, or psychology) may elect courses drawn from theatre, speech communication, or rhetoric to deepen their understanding of and competencies in situations constituted by communication acts. Persons with career plans in any of the pre-professional study areas (e.g., engineering, nursing, pre-law, pre-medicine, or the natural sciences) may elect coursework specially designed to develop understandings and skills relevant to success in those fields.

Graduate Program
For information on the graduate degree program in English, see the UAH Graduate Catalog.

English (EH)

003 Basic English  No credit
Required for students whose placement test score or class performance indicates the need of remedial work.

097 Beginning English as a Second Language  No credit
Introduces non-native speakers of English to the basic essentials of the English sound system and English grammar. Provides the beginner and those with little or no formal instruction with a foundation in spoken and written English. Open to non-native speakers who wish to review the basic sounds, vocabulary, and sentence structures of English.

Also introduces the student to important aspects of the American English speaking culture. Prerequisite: Non-native speakers.

098 Basic English as a Second Language (Intermediate ESL)  No credit
Designed to improve basic English language skills of non-native speakers. Lectures, drills, and exercises are designed to enhance skill levels in oral production, reading, composition, and comprehension of written and spoken material. Primary focus is on Standard American English and the culture in which it is spoken.

099 English as a Second Language (Advanced)  No credit
Grammar and Composition Review
Review of structural essentials, vocabulary, and stylistic devices used in intermediate level ESL composition. Emphasis will be placed on reviewing and improving students' composition skills through explanation, drill, and practical exercises.

101 Freshman Composition  3 hrs.
Emphasis on writing, including at least one documented paper; readings in the essay and other non-fiction prose models. Prerequisite: placement.

102 Freshman Composition  3 hrs.
Emphasis on writing related to close critical reading of fiction, drama, and poetry. Prerequisite: EH 101.

Courses below are open to students who have completed 6 hours of freshman composition, with exceptions as indicated.

205 Survey of English Literature  3 hrs.
Anglo-Saxon period through Milton.

206 Survey of English Literature  3 hrs.
Restoration through twentieth century.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>207</td>
<td>Modern English Grammar</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Structural grammar with review of traditional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>grammar and introduction to transformational</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ism.</td>
<td></td>
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<tr>
<td>210</td>
<td>Fiction Writing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Practice in writing of fiction from conception</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to revision. Prerequisites: EH 206 and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>civilization; Rabelais to the present.</td>
<td></td>
</tr>
<tr>
<td>242</td>
<td>Mythology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Archetypal, metaphorical, and historical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>significance of deities and myths.</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Strategies for Business Writing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Practical business writing with emphasis on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rhetoric, organization, and research.</td>
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</tr>
<tr>
<td></td>
<td>Prerequisites: 6 hours of freshman composition;</td>
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</tr>
<tr>
<td></td>
<td>CM 113, BIB 230, junior standing; open to all</td>
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</tr>
<tr>
<td></td>
<td>students in the School of Administrative Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or by permission of the Department of English</td>
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</tr>
<tr>
<td></td>
<td>and Communication Arts.</td>
<td></td>
</tr>
<tr>
<td>301</td>
<td>Technical Writing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Practical writing, especially reports and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>proposals, with emphasis on organization,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>research, and presentation. Prerequisites: 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hours of freshman composition and junior standing</td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>Technical Editing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Clarifying, expanding, reducing, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rewriting technical reports and other</td>
<td></td>
</tr>
<tr>
<td></td>
<td>documents created by others. Emphasis on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>elements of style and usage, revision,</td>
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<tr>
<td></td>
<td>proofreading, and application of rhetorical</td>
<td></td>
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<tr>
<td></td>
<td>techniques to the work of engineers, scientists,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and technicians. Prerequisites: EH 300 or EH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>301.</td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>Advanced Fiction Writing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Practice in sophisticated techniques for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>controlling complex experience in fictional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>form. Prerequisite: Approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>Practicum in Writing</td>
<td>1-3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Writing and editing under the supervision of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>professionals. May be repeated up to three</td>
<td></td>
</tr>
<tr>
<td></td>
<td>separate terms for no more than 3 hours total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>credit.</td>
<td></td>
</tr>
</tbody>
</table>

Courses below are open to students who have completed the general education requirement in literature, with exceptions as indicated.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>330</td>
<td>Major American Writers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Major writers from the Colonial period to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Whitman and Melville.</td>
<td></td>
</tr>
<tr>
<td>331</td>
<td>Major American Writers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Dickinson to Eliot and Faulkner.</td>
<td></td>
</tr>
<tr>
<td>339</td>
<td>Special Studies in American Literature and</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Culture Topics announced in advance. Applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to American Studies minor.</td>
<td></td>
</tr>
<tr>
<td>340</td>
<td>Special Topics in Literature</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Theme, writer, or historical movement to be</td>
<td></td>
</tr>
<tr>
<td></td>
<td>announced in advance.</td>
<td></td>
</tr>
<tr>
<td>345</td>
<td>Special Topics in Film, Literature, and Film</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Theory Offered periodically on varying topics.</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Title</td>
<td>Hours</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>360</td>
<td>Shakespeare</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Renaissance background and at least six plays, including history, comedy, and major tragedies.</td>
<td></td>
</tr>
<tr>
<td>380</td>
<td>Restoration and Early Eighteenth Century</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Dryden, Swift, Pope, and others.</td>
<td></td>
</tr>
<tr>
<td>381</td>
<td>Later Eighteenth Century</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Johnson, Boswell, and others.</td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>The Romantic Period</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Poetry and nonfictional prose, 1780-1832.</td>
<td></td>
</tr>
<tr>
<td>391</td>
<td>The Victorian Period</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Poetry and nonfictional prose, 1832-1901.</td>
<td></td>
</tr>
<tr>
<td>407</td>
<td>English Linguistics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Advanced grammar including traditional and contemporary analyses of major English syntactic patterns; dialect studies; analysis of style; and selected socio- and psycho-linguistic topics.</td>
<td></td>
</tr>
<tr>
<td>408</td>
<td>History of the English Language</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Diachronic study of the English language from the pre-Anglo-Saxon period to the modern English period. Analysis of the phonological, morphological, syntactic, and semantic changes that have taken place in the language. Historical events that have influenced and effected changes in the language. Prerequisite: junior standing.</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>Modern Poetry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>421</td>
<td>Modern Drama</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>New movements in drama from Ibsen to the present.</td>
<td></td>
</tr>
<tr>
<td>430</td>
<td>The American Novel</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Theme and form of the American novel from Cooper to James.</td>
<td></td>
</tr>
<tr>
<td>431</td>
<td>The American Novel</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Representative works from the school of naturalism to the present.</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>Chaucer</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td><em>The Canterbury Tales</em> and other major works.</td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>Sixteenth-Century Poetry and Prose</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>More, Wyatt, Sidney, Spenser, and others.</td>
<td></td>
</tr>
<tr>
<td>470</td>
<td>Milton</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Milton’s minor poems, selected prose, and <em>Paradise Lost</em>. Recommended prerequisite: one upper level English course.</td>
<td></td>
</tr>
<tr>
<td>474</td>
<td>Seventeenth-Century Prose 1600-1660</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>492</td>
<td>The English Novel</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Defoe to Jane Austen: critical reading of representative novels accompanied by historical study of the emergence of the genre.</td>
<td></td>
</tr>
<tr>
<td>493</td>
<td>The English Novel</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Dickens through Hardy: critical reading of representative novels accompanied by historical survey of major trends.</td>
<td></td>
</tr>
</tbody>
</table>
Courses listed below are for undergraduate students of exceptional ability or who have senior standing. Graduate students in these courses are given additional assignments and are expected to perform at a higher level.

500 **Literary Criticism and Theory**  
Representative texts and approaches from Plato to the present.  
3 hrs.

507 **English Linguistics** (see EH 407)  
3 hrs.

508 **History of the English Language** (see EH 408)  
3 hrs.

530 **Special Studies in American Literature**  
Intensive study of one or more writers, groups, or movements; announced in advance. Prequisite: junior standing.  
3 hrs.

532 **Southern Renaissance**  
Origin and development of Southern myth with emphasis on major writers of the Southern Renaissance. Prequisite: junior standing.  
3 hrs.

533 **William Faulkner**  
Biography, background, and critical study of the major novels.  
3 hrs.

540 **Special Studies in English Literature**  
Intensive study of one or more writers, groups, movements; announced in advance. Prequisite: junior standing.  
3 hrs.

551 **Middle English Literature**  
The literature of later medieval England, excluding Chaucer, chosen from the Gawain poet, Malory, romance and dream vision, the drama, and the short poem.  
3 hrs.

571 **Renaissance Drama**  
Major plays of the sixteenth and early seventeenth centuries, including Marlowe, Jonson, and others. Excludes Shakespeare.  
3 hrs.

572 **Seventeenth-Century Poetry**  
Seventeenth-century poetry, excluding Milton. Recommended undergraduate prequisite: junior standing.  
3 hrs.

594 **Studies in the Twentieth-Century Novel**  
Major novelists: their depiction of reality in response to the post-Darwinian world.  
3 hrs.

601 **The Idea of the Tragic**  
3 hrs.

630 **Studies in American Literature to 1865**  
3 hrs.

631 **Studies in American Literature since 1865**  
3 hrs.

649 **Special Studies**  
3 hrs.

650 **Chaucer**  
3 hrs.

660 **Shakespeare**  
3 hrs.

665 **Renaissance Poetry and Prose**  
3 hrs.

670 **Milton**  
3 hrs.

680 **Eighteenth-Century Studies**  
3 hrs.

690 **Studies in English Romanticism**  
3 hrs.

691 **Studies in the Victorian Period**  
3 hrs.
Master's Thesis 3 hrs.

Communication Arts (CM)

100 Introduction to Communication Arts 3 hrs.
Basic introduction to the study of communication arts. Designed for persons interested in pursuing advanced study in the communication arts curriculum.

110 Voice and Diction 3 hrs.
Introductory course on language, speech, and hearing. Development of individual vocal skills.

113 Basic Speech Communication 3 hrs.
Study and practice of intrapersonal, interpersonal, group, and public communication skills. Development of communication competence and rhetorical sensitivity. Prerequisite: EH 101.

122 Introduction to Theatre 3 hrs.
An introductory survey of theatre art, focusing on understanding/appreciation of performance components and genres.

Mass communication theory, history of American mass media, and criticism of contemporary forms and functions of mass communication in the United States. (Same as SOC 130).

201 Journalism I 3 hrs.

202 Journalism II 3 hrs.
Reporting skills in specialized areas of local government, police, courts, and education. Prerequisite: CM 201 or approval of instructor.

214 Oral Interpretation 3 hrs.
Study and practice in intellectual, artistic, and communicative skills required to read prose, poetry, and drama aloud effectively. Participation in a group performance. Prerequisite: CM 110, or CM 113, or approval of instructor.

221 Acting 3 hrs.
Fundamentals of acting, including physical, vocal, and intellectual skills. Theory and practice in script analysis, scene study, improvisation, and mime. Prerequisite: CM 110, or CM 113, or CM 214, or approval of instructor.

240 Communication Arts Practicum 1 hr.
Credit for execution of major responsibility in communication arts activities under faculty supervision. May be repeated up to three times for credit as part of a CM minor. Prerequisite: approval of Communication Arts faculty before registration.

250 Interpersonal Communication 3 hrs.
Development of competency in interpersonal skills, including listening, empathy, conflict resolution, and building and maintaining relationships. Prerequisite: CM 113.

251 Small Group Communication 3 hrs.
Introduction to the theories and techniques of group discussion emphasizing the skills of leadership, participation, and presentation. Offered alternate years. Prerequisite: CM 113.

301 News Editing, Headlining, and Layout 3 hrs.
Standard symbols and copy-editing techniques, headline writing and unit counts. Techniques of cover layout and page design. Prerequisite: CM 201 or approval of instructor.

309 History of Rhetoric 3 hrs.
History of rhetoric and persuasion from ancient Greece and Rome through 19th century, with emphasis on origins of contemporary understanding of persuasion. Prerequisite: CM 113.
310 Persuasion 3 hrs.
Principles and practices in persuasive communication, emphasizing observation and analysis of persuasive events on qualitative and quantitative levels. Prerequisite: CM 113.

311 Interviewing 3 hrs.
Study and practice of interviewing skills with emphasis on employment interviewing. Prerequisite: CM 113 and junior standing.

315 Argumentation and Debate 3 hrs.
Theory and practice of argumentation and debate. Argumentation will be examined as the mode of inquiry for presenting the processes by which people give reasons to justify their acts, beliefs, and values. Prerequisite: CM 113.

322 Theatre History 3 hrs.
Development of theatre art from the fifth century B.C. Greeks to today. Internal and external factors affecting theatre. Theatre as a mirror of society and a means of effecting change. Prerequisites: CM 122 and sophomore standing or approval of instructor.

330 Psychology of Communication 3 hrs.
An intensive study of various theories, problems, and research in the areas of interpersonal, nonverbal, and mass communication, formulating a psychological conception of humans as information-gathering and information-processing systems. Prerequisite: CM 113 or approval of instructor. Same as PY 330.

340 Special Topics in Communication Arts 3 hrs.
Topics announced in advance. Open to students who have had nine hours in communication arts.

350 Organizational Communication 3 hrs.
An in-depth investigation of formal and informal communication in organizations. Uses a simulation format and stress practical skills associated with effective leadership and participation in group projects. Prerequisite: CM 113.

413 Presentational Speaking 3 hrs.
Intensive investigation of communication skills involved in the design, delivery, and evaluation of business, technical, and professional speeches. Examines individual and group presentations typically encountered in organizations and professions. Prerequisite: CM 113.

415 American Public Address 3 hrs.
Examines public speaking in America from the Puritan era to the 20th century applying principles of rhetorical criticism to analyze selected examples and trends in public communication. Offered alternate years. Prerequisite: CM 113.

422 Directing for the Theatre 3 hrs.
Artistic and intellectual principles of play direction. Emphasis on theory and practice of the director's responsibilities and methods. Prerequisites: CM 122 and CM 221 or approval of instructor.

430 Law of Mass Communication 3 hrs.
Evolution and current status of legal thought and doctrine concerning freedom of expression in speech, print, and broadcasting. Issues of obscenity, censorship, and the "fairness doctrine." Prerequisite: CM 130 or approval or instructor.

431 Communication Theory 3 hrs.
Explores the history and current developments in theoretical approaches to the study of human communication. Prerequisite: six hours in communication arts.

440 Field Study 3 hrs.
Internship or special project requiring prior approval of the Communication Arts faculty. Prerequisites: CM 113 and a minimum of 9 hours of communication arts courses above the 300 level.

160
Studies in Organizational Communication 3 hrs.
Study of various research emphases and findings in the interpretive tradition. Investigations of symbols and meaning in organizations, including issues related to gender differences, the impact of technology on performance, and the communication of power and hierarchy. Prerequisites: CM 113 and one course from CM 250, 251, 309, 350, or 330.

Effective Communication for Managers 3 hrs.

Linguistics

Linguistics is the study of the nature of language as a human communication system. It concerns the relationships between language and society, and between language and mind.

Linguistics includes the examination of the ways in which individual languages pattern their sounds, express grammatical concepts, and exhibit semantic relationships. The basic components of grammar, phonology, morphology, syntax, and semantics, are areas of study by linguists.

Although linguistics course offerings do not constitute a minor at this time, it is possible to construct a cognate studies in linguistics along with a related discipline. For example, one may construct a cognate studies in linguistics and English with the following courses: LI 100, LI 101, LI 320, LI 321, EH 207, EH 407, and EH 408. For further information concerning cognate studies see page 80 of this catalog.

Language, Mind, and Society 3 hrs.
Introduction to general linguistics, including classification of major languages of the world, regional and social differences in language use, language learning, relationships of language and thought and language and culture. The student will be acquainted with the basic linguistic tools for analyzing and describing languages. Opportunity is provided to apply these tools to the description of pseudo-languages.

Introduction to Linguistic Analysis 3 hrs.
Detailed introduction to the terminology, methodologies, and models used in the description of the structure of languages. Includes consideration of contemporary theories of grammar, historical change, and the major components of language. Practical application in analyzing real language data and writing a grammar at conclusion of course.

General Comparative Linguistics 3 hrs.
Comparison of the sound systems, grammatical structures, semantic categories, and cultural phenomena of selected modern foreign languages with the structures of modern English. Includes the diachronic perspective of comparing the structures of a single language at one point in time in the history of its development to those of another point in time in the history of its development. Prerequisites: EH 207, or LI 100, or LI 101, or permission of the instructor.

Applied Linguistics 3 hrs.
Formalization of phonological, morphological, syntactic, semantic, cultural differences between modern English and a given foreign language for the construction of a contrastive analysis. Conversion techniques, using a contrastive analysis as the basis for developing pedagogical materials for the teaching of English to native speakers of other languages. Consideration also given to review of current English as a Second Language (ESL) materials and methodologies. Prerequisite: Any one of the following: LI 101, LI 320, EH 207, 407, or permission of the instructor.
Foreign Languages and Literatures Department
Professor Penot (acting chairman), Associate Professors Emeriti Heller, O’Neal; Assistant Professors Goebel, Raymond, Stromecky, Traylor.

French, German, Russian, Spanish

Acquisition of a second language, and through it an understanding of another culture, is not only a personally enriching experience, it is also, today, a valuable and salable commodity.

The language programs are designed to enable effective use of modern foreign language, both oral and written, in social, business and professional life.

The department offers majors in French and German, minors in French, German, Russian, and Spanish, and participates in the Russian Area Studies Program. A composite major in Foreign Languages—International Trade (in cooperation with the School of Administrative Science) with French, German, Russian, or Spanish is also available.

General Education Requirements and Placement Procedures

Twelve semester hours of credit in one foreign language are required for the B.A. or B.S. degree unless the student can demonstrate a competence at a level more advanced than the beginning 101 course.

Students who studied a foreign language in high school will be placed on four (4) different levels according to the chart shown below:

Any study taking a language course at a level lower than official placement will receive no degree credit for such course(s).

<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 - 1½ units</td>
<td>101, 102, 201, 202</td>
</tr>
<tr>
<td>2nd level (102)</td>
<td>2 - 2½ units</td>
<td>102, 201, 202</td>
</tr>
<tr>
<td>3rd level (201)</td>
<td>3 - 3½ units</td>
<td>201, 202</td>
</tr>
<tr>
<td>4th level (202)</td>
<td>4 - plus</td>
<td>202 + one 300 level course</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 will be adjusted downward as indicated below:

<table>
<thead>
<tr>
<th>High School Study</th>
<th>Interval</th>
<th>Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 - 2½ units</td>
<td>2 years or more</td>
<td>101</td>
</tr>
<tr>
<td>3 - 4 units</td>
<td>3 years or more</td>
<td>101</td>
</tr>
</tbody>
</table>

In such instances, a student may request to be examined for higher placement.

As a general rule, native and quasi-native speakers of a language may not take an introductory course, nor the first advanced conversation course in that language, but will be required to take six hours at the 300 level to satisfy their language requirement. Students in this category must make an appointment with the appropriate language coordinator for placement purposes. An oral and/or written test may be required.

N.B. (1) As of September 1, 1985, FL&L no longer accepts CLEP credit or AP credit in foreign languages.
Program of Studies (A.O.C.)

Major—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 declaring a minor or major must have six (6) hours of upper level credit earned at U.A.H. in the language studied.

A student seeking teacher certification in a language must show 27 earned semester hours of credit in the language on his/her transcript.

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. Advanced conversation, advanced grammar and composition, and the introduction to literature courses are required. An additional course on the 300 level complete the requirement for the minor.

Area of Concentration (AOC) with French Major

Required courses: FH 301, and 302, and 305, or 306, two courses on the 400 level, and two electives from either the 300 or 400 level.

Area of Concentration (AOC) with German Major

Required courses: GN 301, and 302, 305 or 306, two courses on the 400 level, and two electives from either the 300 or 400 level.

Area of Concentration (AOC) with Russian Area Studies Major

The Russian Area Studies Program is an enrichment program as well as one to prepare students for careers in government, industry, international commerce and trade, and other related areas of work, while providing the necessary preparation for further study on the graduate level.

Drawing from four disciplines, foreign languages and literatures, history, political science, and economics, the program places emphasis on Russian (language, literature, and culture) and history, with strong supporting work in political science and economics.

Russian area studies, through a controlled program of study, offers the student intensive training aimed at the development of competency in more than one area. Requirements for the Russian Area Studies Program are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Required Courses</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN</td>
<td>101, 102, 201, 202, 305 or 306, 301, 302, 304 and two 400-level courses</td>
<td>30</td>
</tr>
<tr>
<td>HY</td>
<td>101, 102, 375, 376, 590 and three courses approved by the History and Philosophy Department chairman</td>
<td>24</td>
</tr>
<tr>
<td>PSC</td>
<td>101, 246, 336, or 337</td>
<td>9</td>
</tr>
<tr>
<td>EC</td>
<td>300, 400, 585 (two of these courses required)</td>
<td>69</td>
</tr>
</tbody>
</table>

The student is advised to choose elective courses that will strengthen the major areas or develop ancillary proficiency.

Student advisers are available in the cooperating departments.
**Foreign Languages-International Trade (FLIT)**

In conjunction with the School of Administrative Science, the department offers a curriculum combining the study of a foreign language and various disciplines in administrative science. Such a major opens up a broad variety of career opportunities in the multinational and multilingual business world of today.

The student’s program must include the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 101, 102</td>
<td>Freshman Composition</td>
</tr>
<tr>
<td>EH 205 and 241 or EH 206 and 240</td>
<td>English Literature and World Literature 12</td>
</tr>
<tr>
<td>EC 142, 143</td>
<td>Principles of Economics 9</td>
</tr>
<tr>
<td>EC 235</td>
<td>Economic Geography 9</td>
</tr>
<tr>
<td>MSC 287</td>
<td>Statistical Analysis 3</td>
</tr>
<tr>
<td>HY 101, 102</td>
<td>Origins and Development of the Contemporary World</td>
</tr>
<tr>
<td>HY 337</td>
<td>Contemporary Latin America</td>
</tr>
<tr>
<td>HY 341</td>
<td>Modern France</td>
</tr>
<tr>
<td>HY 343</td>
<td>Modern Germany</td>
</tr>
<tr>
<td>Hy 376</td>
<td>Twentieth Century Russia</td>
</tr>
<tr>
<td>Hy 392</td>
<td>Europe since 1815</td>
</tr>
<tr>
<td>Hy 495</td>
<td>Modern Europe</td>
</tr>
<tr>
<td>MA 105</td>
<td>College Algebra</td>
</tr>
<tr>
<td>MA 119</td>
<td>Precalculus I 3</td>
</tr>
<tr>
<td>*NS 111</td>
<td>Ecological Awareness (Includes Laboratory)</td>
</tr>
<tr>
<td>*NS 112</td>
<td>Physical Science and Society (Includes Laboratory)</td>
</tr>
<tr>
<td>*NS 113</td>
<td>Human Awareness (Includes Laboratory) 12</td>
</tr>
</tbody>
</table>

*Other sciences may be substituted but the Natural Science sequence is recommended.*

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSC 246</td>
<td>International Politics 3</td>
</tr>
<tr>
<td>AC 211</td>
<td>Principles of Accounting I</td>
</tr>
<tr>
<td>AC 221</td>
<td>Accounting Lab I</td>
</tr>
<tr>
<td>AC 212</td>
<td>Principles of Accounting II</td>
</tr>
<tr>
<td>AC 222</td>
<td>Accounting Lab II</td>
</tr>
<tr>
<td>BLS 221</td>
<td>Business Law I</td>
</tr>
<tr>
<td>FIN 301</td>
<td>Principles of Finance</td>
</tr>
<tr>
<td>MGT 301</td>
<td>Principles of Management</td>
</tr>
<tr>
<td>MKT 301</td>
<td>Principles of Marketing</td>
</tr>
<tr>
<td>AC 450</td>
<td>Studies in International Accounting</td>
</tr>
<tr>
<td>EC 546</td>
<td>International Economics and Trade</td>
</tr>
<tr>
<td>FIN 554</td>
<td>International Finance</td>
</tr>
<tr>
<td>MGT 520</td>
<td>International Management</td>
</tr>
<tr>
<td>MKT 515</td>
<td>International Marketing</td>
</tr>
<tr>
<td>FL 101, 102</td>
<td>Elementary FL (French, German, Russian, or Spanish)</td>
</tr>
<tr>
<td>FL 201, 202</td>
<td>Intermediate FL (French, German, Russian, or Spanish)</td>
</tr>
</tbody>
</table>
A student majoring in a foreign language will find a variety of AOC's which enable him 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. Model AOC's are available in the Foreign Languages and Literatures office. A student who wishes to plan his own AOC should do so in consultation with a member of the particular language faculty. This AOC may also be used for teaching certification.

Minor
An AOC requires a minor (see definition and regulations elsewhere in catalog). Possible minors for foreign language majors are available in the Foreign Languages and Literatures Office. See program of studies for foreign language in minor.

French for Second Area of Study
A student majoring in elementary education may select French as a second area of study. See Education section for major requirements.

To meet university requirements, a minimum of 18 hours, 15 of which must be upper level, are to be selected from courses listed below with the help of the French faculty adviser and approved by the chairman of the Department of Foreign Languages and Literatures. This curriculum may require more than the minimum total of 128 hours for the degree.

German for Second Area of Study
A student majoring in elementary education may select French as a second area of study. See Education section for major requirements.

To meet university requirements, a minimum of 18 hours, 15 of which must be upper level, are to be selected from courses listed below with the help of the German faculty adviser and approved by the chairman of the Department of Foreign Languages and Literatures. This curriculum may require more than the minimum total of 128 hours for the degree.

Foreign Languages and Literatures (FLL) Courses
Courses coded under FLL are language-related courses taught in English. Therefore such courses cannot count toward language major or minor requirements.
Foreign Languages and Literatures (FLL)

319 German Masterpieces in English Translation 3 hrs.
German literature in English translation from its beginning to the present, with emphasis on mature works of such writers as Goethe, Schiller, Hoffman, Kleist, and Kafka.

333 Russian Masterpieces in English Translation 3 hrs.
Prerequisite: EH 206 or approval of instructor.

French (FH)

101 Elementary French 3 hrs.
Lab fee: Level 2.

102 Elementary French 3 hrs.
Lab fee: Level 2. Prerequisite: FH 101 or placement.

201 Intermediate French 3 hrs.
Lab fee: Level 2. Prerequisite: FH 102 or placement.

202 Intermediate French 3 hrs.
Lab fee: Level 2. Prerequisite: FH 201 or placement.

301 French Conversation 3 hrs.
Oral drills, pronunciation exercises, and simple oral reports. Prerequisite: FH 202.

302 Advanced French Composition 3 hrs.
Composition with emphasis on grammar review and idiomatic expression. Prerequisite: FH 202, or approval of instructor.

303 French for Business and Professions 3 hrs.
The reading and translation of (two-way) materials, documents, and forms pertinent to commerce and professions. Individualized instruction. Prerequisite: FH 202 or approval of instructor.

304 French Culture 3 hrs.
Contrastive cultural patterns of French-speaking peoples: their cause and effect. Prerequisite: FH 202 or approval of instructor.

305 Survey of French Literature I 3 hrs.
French literature from the medieval period through the eighteenth century. Prerequisite: FH 301, FH 302 or approval of instructor.

306 Survey of French Literature II 3 hrs.
French literature from 1800 to the present. Prerequisite: FH 301, FH 302 or approval of instructor.

403 Sixteenth Century French Literature 3 hrs.
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.

404 Seventeenth Century French Literature 3 hrs.
Masterpieces of the period with emphasis on the theater of Corneille, Racine, and Moliere. Prerequisite: FH 305 or 306 or approval of instructor.

405 Eighteenth Century French Literature 3 hrs.
French thought and writing in le Siècle des Lumières. Representative works from Voltaire to Chénier. Prerequisite: FH 305 or 306 or approval of instructor.

406 Nineteenth Century French Novel 3 hrs.
Principal novelists of the nineteenth century: Balzac, Stendhal, Flaubert, Zola. Prerequisite: FH 305 or 306 or approval of instructor.
407 French Drama
The most influential French dramatists from the nineteenth century to the present. Prerequisite: FH 305 or 306 or approval of instructor.

408 Twentieth Century French Novel
The most influential French novelists from the beginning of the century to the present from Proust to Claude Simon. Prerequisite: FH 305 or 306 or approval of the instructor.

410 Practicum
Interpretation (simultaneous translation) and oral presentations, using the laboratory, guests (native speakers), periodicals, brochures, etc. Recommended as a companion course for FH 303. Individualized instruction. Prerequisite: FH 303 or approval of instructor.

499 Independent Studies
Prerequisite: approval of department chairman.

German (GN)

101 Elementary German I
Lab fee: Level 2.

102 Elementary German II
Lab fee: Level 2. Prerequisite: GN 101 or placement.

201 Intermediate German I
Lab fee: Level 2. Prerequisite: GN 102 or placement.

202 Intermediate German II
Lab fee: Level 2. Prerequisite: GN 201 or placement.

301 German Conversation
Oral practice, communication and reports, emphasizing topics of daily experiences, travels, and contemporary German life. Prerequisite: GN 202 or approval of instructor.

302 Advanced German Composition and Usage
Composition with emphasis on grammar review and idiomatic expression. Prerequisite: GN 202 or approval of instructor.

303 German for Business and Professions
Read and translate (two-way) materials, documents, and forms pertinent to commerce and the professions. Individualized instruction. Prerequisite: GN 202 or approval of instructor.

304 German Culture
Contrastive American and German cultural patterns: their cause and effect. Prerequisite: GN 202 or approval of instructor.

305 Survey of German Literature I
German literature from its beginning to 1785. Prerequisite: GN 301 or GN 302 or approval of instructor.

306 Survey of German Literature II
German literature from the end of the eighteenth century to the present. Prerequisite: GN 301 or GN 302 or approval of instructor.

404 Development and Structure of the German Language
Linguistic development of the German language, with emphasis on the structure of modern High German. Contrastive analysis of the phonological, morphological, syntactic and semantic structures of Modern High German and Standard American English. Prerequisite: GN 301 or GN 302 and LI 100 or LI 101 or approval of instructor.
Goethe, Schiller and Major Writers of Eighteenth Century 3 hrs. Contributions of Goethe and Schiller to German literature compared with significant works by contemporary writers of the eighteenth century: Lessing, Gellert, Klopstock, Herder, Wieland, Lenz, et al. 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 drama, short stories, and novels. 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.

Goethe's Faust 3 hrs. Goethe's drama in the context of German and European literary tradition. Prerequisite: GN 305 or 306 or approval of instructor.

Practicum 3 hrs. Interpretation (simultaneous translation) and oral presentations, using laboratory, guests (native speakers), periodicals, brochures, etc. Highly recommended as a companion course for GN 303. Individualized instruction. Prerequisite: GN 303 or approval of instructor.

Independent Studies 3 hrs. Prerequisite: approval of department chairman.

Russian (RN)

Elementary Russian 3 hrs. Lab fee: Level 2.

Elementary Russian 3 hrs. Lab fee: Level 2. Prerequisite: RN 101 or placement.

Intermediate Russian 3 hrs. Lab fee: Level 2. Prerequisite: RN 102 or placement.

Intermediate Russian 3 hrs. Lab fee: Level 2. Prerequisite: RN 201 or placement.

Intermediate Scientific Russian 3 hrs. Prerequisite: RN 201 or permission of the instructor.

Russian Conversation 3 hrs. Prerequisite: RN 202 or approval of instructor.

Advanced Grammar and Composition 3 hrs. Prerequisite: RN 202 or approval of instructor.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>303</td>
<td>Russian for Business and Professions</td>
<td>3 hrs.</td>
<td>The reading and translation of (two-way) materials, documents, and forms pertinent to commerce and the professions. Individualized instruction. Prerequisite: RN 202 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>304</td>
<td>Russian Culture</td>
<td>3 hrs.</td>
<td>Contrastive American and Russian cultural patterns: their cause and effect: Prerequisite: RN 202 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>305</td>
<td>Survey of Russian Literature I</td>
<td>3 hrs.</td>
<td>Russian literature from its beginning to Pushkin. Prerequisite: RN 301 or RN 302 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>306</td>
<td>Survey of Russian Literature II</td>
<td>3 hrs.</td>
<td>Russian literature from Pushkin to the present. Prerequisite: RN 301 or RN 302 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>433</td>
<td>Major Writers of the Nineteenth Century</td>
<td>3 hrs.</td>
<td>Representative works from Pushkin through Chekhov. Prerequisite: RN 305 or 306 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>438</td>
<td>Russian Poetry</td>
<td>3 hrs.</td>
<td>Russian verse from its beginning to Pushkin. An 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.</td>
<td></td>
</tr>
<tr>
<td>439</td>
<td>Gogol</td>
<td>3 hrs.</td>
<td>Gogol's major works, especially <em>Dead Souls</em>. Style, ideology, and literary technique of the author. Prerequisite: RN 305 or 306 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>440</td>
<td>Dostoevsky</td>
<td>3 hrs.</td>
<td>Major works by Dostoevsky, regarding style, ideology, philosophies, and technique. Prerequisite: RN 305 or 306 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>441</td>
<td>Practicum</td>
<td>3 hrs.</td>
<td>Interpretation (simultaneous translation) and oral presentations, using the laboratory, guests (native speakers), periodicals, brochures, etc. Recommended as a companion course for RN 303. Individualized instruction. Prerequisite: RN 303 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>499</td>
<td>Independent Studies</td>
<td>1-3 hrs.</td>
<td>Prerequisite: approval of department chairman.</td>
<td></td>
</tr>
<tr>
<td><strong>Spanish (SH)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Elementary Spanish</td>
<td>3 hrs.</td>
<td>Lab fee: Level 2.</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>Elementary Spanish</td>
<td>3 hrs.</td>
<td>Lab fee: Level 2. Prerequisite: SH 101 or placement.</td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>Intermediate Spanish</td>
<td>3 hrs.</td>
<td>Lab fee: Level 2. Prerequisite: SH 102 or placement.</td>
<td></td>
</tr>
<tr>
<td>202</td>
<td>Intermediate Spanish</td>
<td>3 hrs.</td>
<td>Prerequisite: SH 201 or placement.</td>
<td></td>
</tr>
<tr>
<td>301</td>
<td>Spanish Conversation and Pronunciation</td>
<td>3 hrs.</td>
<td>Prerequisite: SH 202 or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>Advanced Spanish Grammar and Composition</td>
<td>3 hrs.</td>
<td>Recommended for teachers. Prerequisite: SH 202 or approval of instructor.</td>
<td></td>
</tr>
</tbody>
</table>
303 **Spanish for Business and Professions** 3 hrs.
The reading and translation of (two-way) materials, documents, and forms pertinent to commerce and the professions. Individualized instruction. Prerequisite: SH 202 or approval of instructor.

304 **Hispanic Culture** 3 hrs.
Contrastive Hispanic and American cultural patterns; their cause and effect. Prerequisite: SH 202 or approval of instructor.

305 **Survey of Spanish Literature I** 3 hrs.
Spanish literature from its beginning to 1700. Prerequisite: SH 301 or SH 302 or approval of instructor.

306 **Survey of Spanish Literature II** 3 hrs.
Spanish literature from 1700 to the present. Prerequisite: SH 301 or SH 302 or approval of instructor.

420 **Practicum** 3 hrs.
Interpretation (simultaneous translation) and oral presentations, using the laboratory, guests (native speakers), periodicals, brochures, etc. Recommended as a companion course for SH 303. Individualized instruction. Prerequisite: SH 303 or approval of instructor.

423 **Cervantes: Don Quixote** 3 hrs.
Diverse interpretations of this famous novel and its extraordinary significance as a work. Prerequisite: SH 305 or 306 or approval of instructor.

424 **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: SH 305 or 306 or approval of instructor.

427 **Spanish American Novel** 3 hrs.
Representative novels of the modern period, which reflect the cultural, economic, political and social concerns of the Spanish-American republics, nationally and internationally. Prerequisite: SH 305 or 306 or approval of instructor.

429 **The Generation of '98** 3 hrs.
Literary and philosophical works representative of this important group of Spanish writers. Emphasis on Miguel de Unamuno. Prerequisite: 305 or 306 or approval of instructor.

499 **Independent Studies** 1-3 hrs.
Prerequisite: approval of department chairman.
Health and Physical Education Program
Director: Dr. Joe Manjone

Health and Physical Education Offerings
Fitness, active participation, and good health habits are essential in modern society. Through a variety of health and physical education activity courses, (HPE 100 through 179) the student can increase fitness, learn skills for a lifetime of participation, and gain a conceptual knowledge of health practices and skills.

These activity courses carry 1 semester hour of credit with no more than 6 hours counting toward graduation. Courses may not be repeated for credit. Grades of satisfactory or unsatisfactory are given, based primarily on a student's improvement in skill rather than on the level of ability or knowledge brought to the course. A participant in a varsity sport may not enroll in a regular activity course in that sport.

Because of demonstrated community need, a number of courses that provide professional training in aspects of Health and Physical Education and related fields are offered in the HPER program. Many of these courses meet certification standards with certificates awarded upon completion. They require both skill and academic training. Normal letter-grade system and other academic standards apply to them.

Health and Physical Education (HPE)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Level</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Physical Fitness; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>101</td>
<td>Slimnastics; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>102</td>
<td>Aerobic Dance; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>103</td>
<td>Jogging for Fitness and Weight Control</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>104</td>
<td>Beginning Weight Training; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>105</td>
<td>Beginning Self-Defense; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>106</td>
<td>Folk and Square Dance; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>107</td>
<td>Beginning Stunts and Tumbling; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>108</td>
<td>Yoga; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>109</td>
<td>Bicycle Touring</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>110</td>
<td>Beginning Swimming; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>111</td>
<td>Slimnastics; Lab fee: Level 1</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>112</td>
<td>Basic Canoeing; Lab fee: Level 2</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>113</td>
<td>Basic Sailing; Lab fee: Level 3</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>114</td>
<td>Sailboat Cruising; Lab fee: Level 3</td>
<td></td>
<td>1 hr.</td>
</tr>
<tr>
<td>115</td>
<td>Badminton; Lab fee: Level 1</td>
<td></td>
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<tr>
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<td>Activity</td>
<td>Lab fee:</td>
<td>Time</td>
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<tr>
<td>116</td>
<td>Racquetball</td>
<td>Level 1</td>
<td>1 hr</td>
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<tr>
<td>117</td>
<td>Beginning Tennis</td>
<td>Level 1</td>
<td>1 hr</td>
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<tr>
<td>118</td>
<td>Handball</td>
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<td>1 hr</td>
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<tr>
<td>119</td>
<td>Windsurfing</td>
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<tr>
<td>120</td>
<td>Archery</td>
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<td>121</td>
<td>Ice Skating</td>
<td>Level 4</td>
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<tr>
<td>122</td>
<td>Ballroom Dance</td>
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<tr>
<td>123</td>
<td>Frisbee</td>
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<tr>
<td>124</td>
<td>Backpacking</td>
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<td>1 hr</td>
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<tr>
<td>125</td>
<td>Basic Horseback Riding</td>
<td>Level 10</td>
<td>1 hr</td>
</tr>
<tr>
<td>126</td>
<td>Beginning Golf</td>
<td>Level 4</td>
<td>1 hr</td>
</tr>
<tr>
<td>127</td>
<td>Beginning Bowling</td>
<td>Level 3</td>
<td>1 hr</td>
</tr>
<tr>
<td>128</td>
<td>Basic Bridge</td>
<td></td>
<td>1 hr</td>
</tr>
<tr>
<td>129</td>
<td>Snow Skiing</td>
<td>Variable</td>
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<td>Basketball</td>
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<td>131</td>
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<td>132</td>
<td>Softball</td>
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<td>133</td>
<td>Soccer</td>
<td>Level 1</td>
<td>1 hr</td>
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<tr>
<td>134</td>
<td>Ice Hockey Instruction</td>
<td>Level 4</td>
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<tr>
<td>135</td>
<td>Sport Parachuting</td>
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<tr>
<td>136</td>
<td>Jazz Dance</td>
<td>Level 1</td>
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<tr>
<td>137</td>
<td>Intermediate Jazz Dance</td>
<td>Level 1</td>
<td>1 hr</td>
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<tr>
<td>138</td>
<td>Intermediate Ice Hockey</td>
<td>Level 4</td>
<td>1 hr</td>
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<tr>
<td>139</td>
<td>Intermediate Folk and Square Dance (Clogging)</td>
<td>Level 4</td>
<td>1 hr</td>
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<tr>
<td>140</td>
<td>Intermediate Ice-Skating</td>
<td>Level 4</td>
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<tr>
<td>141</td>
<td>Intermediate Swimming</td>
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<td>1 hr</td>
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<tr>
<td>142</td>
<td>Intermediate Self-Defense</td>
<td>Level 1</td>
<td>1 hr</td>
</tr>
<tr>
<td>143</td>
<td>Intermediate Tennis</td>
<td>Level 3</td>
<td>1 hr</td>
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<tr>
<td>144</td>
<td>Intermediate Racquetball</td>
<td>Level 1</td>
<td>1 hr</td>
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<tr>
<td>145</td>
<td>Intermediate Bridge</td>
<td>Level 1</td>
<td>1 hr</td>
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<td>Course</td>
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<tr>
<td>Intermediate Stunts and Tumbling</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Intermediate Golf</td>
<td>Level 4</td>
<td>1 hr.</td>
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<tr>
<td>Intermediate Frisbee</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Intermediate Aerobic Dance</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Lifesaving</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Tennis</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Self-Defense</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Slimnastics</td>
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<td>1 hr.</td>
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<tr>
<td>Advanced Racquetball</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Frisbee</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Weight Training</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Advanced Bowling</td>
<td>Level 3</td>
<td>1 hr.</td>
<td></td>
</tr>
<tr>
<td>Advanced Ice-Skating</td>
<td>Level 4</td>
<td>1 hr.</td>
<td></td>
</tr>
<tr>
<td>Advanced Aerobic Dance</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Power Weight Lifting</td>
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<td>Water-Safety Instruction</td>
<td>Level 2</td>
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<tr>
<td>Horseback Riding II Field Riding</td>
<td>Level 10</td>
<td>1 hr.</td>
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<tr>
<td>Equestrian Studies</td>
<td>Level 6</td>
<td>1 hr.</td>
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<td>Advanced Ice Hockey</td>
<td>Level 4</td>
<td>1 hr.</td>
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<tr>
<td>Jazzercise</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Varsity Sports - Basketball</td>
<td></td>
<td>1 hr.</td>
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<tr>
<td>Varsity Sports - Soccer</td>
<td></td>
<td>1 hr.</td>
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<tr>
<td>Varsity Sports - Crew</td>
<td></td>
<td>1 hr.</td>
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<tr>
<td>Varsity Sports - Tennis</td>
<td></td>
<td>1 hr.</td>
<td></td>
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<tr>
<td>Varsity Sports - Ice Hockey</td>
<td></td>
<td>1 hr.</td>
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</tr>
<tr>
<td>Precision Dance Team</td>
<td>Level 1</td>
<td>1 hr.</td>
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<tr>
<td>Varsity Sports - Volleyball</td>
<td></td>
<td>1 hr.</td>
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<tr>
<td>Varsity Sports - Golf</td>
<td></td>
<td>1 hr.</td>
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</table>

**Professional Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Level</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>History and Principles of Physical Education</td>
<td>Level</td>
<td>3 hrs.</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaching Ice Hockey</td>
<td>1 hr.</td>
<td>Students analyze the mechanics of movement, evaluate strategies, study player-coach relationships, and experience the positive effects of both exercise and competition. Prerequisite: Instructor approval. Lab Fee Level 4.</td>
</tr>
<tr>
<td>CPR Instructor</td>
<td>1 hr.</td>
<td>Twenty-five hours of comprehensive techniques in the basics and instruction of cardiopulmonary resuscitation. Upon successful completion of the course, student is certified as a CPR Instructor. Lab fee: Level 3.</td>
</tr>
<tr>
<td>Emergency Medical Technician-Basic</td>
<td>3 hrs.</td>
<td>Basic techniques of pre-hospital stabilization in such emergency situations as traumatic injuries, cardiac arrest, and other life-threatening health conditions. (Same as MED 191).</td>
</tr>
<tr>
<td>Emergency Medical Technician-Basic Lab</td>
<td>1 hr.</td>
<td>Laboratory course concurrent with MED/HPE 191. Application of techniques taught in MED/HPE 191 to real and simulated situations. Successful completion of the lecture and laboratory course qualifies student for exam for Alabama EMT-Basic License. Prerequisite: MED/HPE 191 or concurrent enrollment. (Same as MED 192).</td>
</tr>
<tr>
<td>Contemporary Medicine and the Young Adult</td>
<td>3 hrs.</td>
<td>Contemporary health systems in the U.S., their various components, and their functional relationships to one another. Common individual health problems significant to young adults and ways in which these problems are manifested clinically, and what constitutes appropriate management.</td>
</tr>
<tr>
<td>Basketball Officiating</td>
<td>2 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>Football Officiating</td>
<td>2 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>Baseball and Softball Officiating</td>
<td>2 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>Soccer Officiating</td>
<td>2 hrs.</td>
<td>Techniques, mechanics, and rules involved in the officiating of soccer. Experience and skills necessary to officiate soccer on elementary, secondary, and recreational levels.</td>
</tr>
<tr>
<td>Scuba</td>
<td>2 hrs.</td>
<td>Basic skills, theories, techniques, and fundamentals of scuba-diving introduced, practiced, and refined. Open water diving. Scuba certification upon successful completion of course. Prerequisite: approval of instructor. Lab fee: Level 5.</td>
</tr>
<tr>
<td>Advanced Scuba</td>
<td>1 hr.</td>
<td>Lecture and dives necessary to earn YMCA—Silver Star and/or PADI Advanced Open Water Rating. Lab fee: TBA</td>
</tr>
<tr>
<td>Southern Freshwater Fishing</td>
<td>1 hr.</td>
<td>Study freshwater fish found in Southern U.S.; theories of fish movement and feeding cycles; environmental effects on fish activity; water topography and sonar devices. Application of light intensity, water acidity, and temperature measurement devices; selection and application of rods and reels; lure selection and presentation; line care and proper knot tying, boating fundamentals; and cleaning methods and techniques for preparing fish.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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</tr>
<tr>
<td>269</td>
<td>Private Pilot Ground School</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>270</td>
<td>Private Pilot Instruction I</td>
<td>1 hr.</td>
</tr>
<tr>
<td>271</td>
<td>Private Pilot Instruction II</td>
<td>1 hr.</td>
</tr>
<tr>
<td>272</td>
<td>Private Pilot Instruction III</td>
<td>1 hr.</td>
</tr>
<tr>
<td>290</td>
<td>Care and Prevention of Athletic Injuries</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>500</td>
<td>Boating Safety</td>
<td>3 hrs.</td>
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</tbody>
</table>

**Recreation (REC)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Introduction to Leisure Services</td>
<td>3 hrs.</td>
<td>History, theory, and philosophy of recreation. Principles and practices related to leisure programming in city, county, and state, federal, private, and commercial agencies. Job descriptions and career opportunities.</td>
</tr>
<tr>
<td>201</td>
<td>Leisure Services Leadership and Supervision</td>
<td>3 hrs.</td>
<td>Processes and techniques of leadership and supervision related to leisure services. Delineation and differences between group action and individualized decision-making. Supervisory experience.</td>
</tr>
<tr>
<td>203</td>
<td>Introduction to Therapeutic Recreation</td>
<td>3 hrs.</td>
<td>Methods and techniques employed in serving special populations with individual and group leisure opportunities. Theoretical in-class and out-of-class applications. Requirement: 40 hours of work experience in a therapeutic setting.</td>
</tr>
<tr>
<td>290</td>
<td>Field Work in Leisure Services</td>
<td>2 hrs.</td>
<td>Planned supervised 80-hour work experience with a leisure service agency. Written reports, a major project, and final oral report required.</td>
</tr>
<tr>
<td>301</td>
<td>Planning Leisure Service Programs</td>
<td>3 hrs.</td>
<td>Theories, principles, policies, and procedures for organizing, directing, and conducting leisure service programs. Development of programs in various activity areas. Prerequisites: REC 100, 201, 203, and 290 or approval of instructor.</td>
</tr>
<tr>
<td>331</td>
<td>European Recreation Study Tour</td>
<td>6 hrs.</td>
<td>A study tour of major European recreation, park, sports, and tourist facilities. Student examines selected recreation facilities and programs in West Germany, Switzerland, Austria and Italy compares these with facilities and programs in the United States. The role of tourism in the total development of European recreation is emphasized. Lab fee extra.</td>
</tr>
</tbody>
</table>
Administration of Leisure Services and Facilities 3 hrs.
Philosophy, principles, problems, policies and procedures associated with the delivery of leisure services are examined. Facility planning, design and administration is emphasized. Prerequisite: REC 301.

Internship in Leisure Services 10 hrs.
A minimum of 400 hours practical, planned work experience in a leisure service agency under the direction of a recreation professional and the UAH intern coordinator. Internship must be appropriate for the selected option. Internship must be approved at least one term in advance. Prerequisite: REC 301, senior standing or approval of instructor.
History and Philosophy Department

Professor J. White (chairman), C. White; Professor Emerita Roberts; Associate Professors Boucher, Hull, Martine, Shields, Williams; Associate Professor Emerita Parker; Assistant Professors Dunar, Gerberding, Rochowiak, Searcy.

The Department of History and Philosophy offers the B.A. and M.A. degrees in history and a minor in philosophy.

General Education Requirements

Transfer and UAH students who have not completed HY 101 and 102 before reaching junior standing may substitute HY 391 and 392 in GER as well as in a history major. Seniors may not take HY 101 or 102.

Area of Concentration (AOC) with History Major

A student in history must include in his academic program a minimum of 36 semester hours in history, including HY 101-102 (a part of GER), HY 221-222, and a minimum of 15 semester hours in courses numbered 300 or above, two of which must be 400 level courses, and one of which must be HY 490.

A history major must take a minimum of 12 hours in American history and a minimum of 12 hours in non-American history. A history major who has taken HY 101-102 may not include HY 391-392 in his AOC except as electives.

A history major who has substituted HY 391-392 for HY 101-102 must also take at least 6 additional hours in non-American history.

The history major as defined above forms part of an area of concentration that must include one of the following variations:

1. An established minor drawn from one department now offering a major that includes a minimum of 21 semester hours, 6 of which must be numbered 300 or above.

2. A minor drawn from a discipline other than those offering a major that includes a minimum of 21 semester hours, 6 of which must be numbered 300 or above.

3. An area of cognate studies drawn from two or more disciplines that includes a minimum of 21 semester hours, 9 of which must be in courses numbered 300 or above.

A student majoring in history will find a variety of AOC's enabling him 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 and Philosophy Department for AOC's including the following: American Studies, graduate school preparation, general, preprofessional and prelaw preparation, international studies, secondary school teaching, and the fine arts. A student who wishes to plan his own AOC can do so through his history adviser and with the coordination of the department chairman.

History Minors

A student interested in an established history minor should include appropriate history courses involving a minimum of 21 semester hours and including 6 semester hours in courses numbered 300 or above. The minor program must have the approval of the History and Philosophy Department chairman. 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 requirements established in (3) above.
Philosophy Minors
Students interested in a philosophy minor must take at least 21 semester hours in philosophy including PHL 201 and 202. Recommended minors 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 9 semester hours in courses numbered 300 or above.

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.
To meet university requirements, a student must select a minimum of 18 hours, 15 of which must be upper level, from courses listed below with the help of the History education faculty adviser and the approval of the chairman of the Department of History and Philosophy. This curriculum may require more than the minimum total of 128 hours for the degree.

Graduate Program
For information on the graduate program in history, refer to the UAH Graduate Catalog.

History (HY)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Notes</th>
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<tbody>
<tr>
<td>101</td>
<td>Origins and Development of the Contemporary World, Part I</td>
<td>3 hrs.</td>
<td>Major Western civilizations to 1500. Not open to seniors.</td>
</tr>
<tr>
<td>102</td>
<td>Origins and Development of the Contemporary World, Part II</td>
<td>3 hrs.</td>
<td>Major Western civilizations since 1500. Not open to seniors.</td>
</tr>
<tr>
<td>221</td>
<td>The United States to 1877</td>
<td>3 hrs.</td>
<td>The discovery of America through the Civil War and Reconstruction.</td>
</tr>
<tr>
<td>222</td>
<td>The United States Since 1877</td>
<td>3 hrs.</td>
<td>The United States from the end of the Civil War era to the present.</td>
</tr>
<tr>
<td>225</td>
<td>History of Alabama</td>
<td>3 hrs.</td>
<td>The state’s past from colonial times to the present with emphasis on its place in United States history.</td>
</tr>
<tr>
<td>229</td>
<td>Survey of Ancient Times</td>
<td>3 hrs.</td>
<td>The ancient Near East, Greece, and Rome. Prerequisites: HY 101-102 or approval of instructor.</td>
</tr>
<tr>
<td>230</td>
<td>The Rise of Medieval Civilizations</td>
<td>3 hrs.</td>
<td>A 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.</td>
</tr>
<tr>
<td>245</td>
<td>Sub-Saharan Africa</td>
<td>3 hrs.</td>
<td>A survey of the people of the land south of the Saharan Desert, especially in the Nile River Valley and along the Ivory and Gold coasts emphasizing their history, culture, and political systems.</td>
</tr>
</tbody>
</table>
Courses listed below are open to students who have completed 12 semester hours in history or have junior standing.

318 Constitutional History of the United States 3 hrs.
A study of the growth and development of the American Constitutional system with emphasis on those aspects of Constitutional growth which relate to the fundamental structure of American government and social order.

329 Imperial Rome 3 hrs.
History of the Roman Empire from the Principate to the barbarian invasions.

337 Latin America and the United States 3 hrs.
Political and diplomatic relations between Latin America and the United States in the nineteenth and twentieth centuries.

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.
Modern German history from the Congress of Vienna in 1815 through the Second World War and Germany's role in current history. Political, economic, and cultural factors in the development of the German nation. Prerequisites: HY 101 and 102.

347 English History to 1660 3 hrs.
A study of 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.

348 English History since 1660 3 hrs.
A study of the 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.

364 The Westward Movement in American History since 1803 3 hrs.
Pioneering society, Indian relations, land policies, expansion, and politics of the westward-moving frontier.

366 Blacks in Twentieth Century America 3 hrs.
The interrelationship of the Negro and the industrial-urban environment of the United States.

369 Social and Cultural History of the United States to 1865 3 hrs.
Major themes in the development of American culture and society from the colonial period to the Civil War era.

370 Social and Cultural History of the United States since 1865 3 hrs.
Major themes in the modernization of American culture and society since the Civil War.

373 Foreign Relations of the United States to 1900 3 hrs.
American foreign relations from the Revolutionery era to the emergence of the United States as a world power. American territorial and commercial expansion and relations with the European powers.

374 Foreign Relations of the United States since 1900 3 hrs.
The 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.

375 Imperial Russia 3 hrs.
The formation and development of the Russian Empire from the reign of Peter the Great until the Revolution of 1905. The multinational character of the Empire and its manifestation in political, economic, and cultural aspects of Russian life.
<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>376</td>
<td>Twentieth-Century Russia</td>
<td>3 hrs.</td>
<td>The last years of Imperial rule, the constitutional experiment. World War I and the resulting</td>
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<td>revolutions of 1917, the rise and development of the Soviet Union from its inception until</td>
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<td>the present.</td>
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<tr>
<td>391</td>
<td>Europe, 1500-1815</td>
<td>3 hrs.</td>
<td>An examination of the economic, commercial, scientific, social, political, and cultural</td>
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<td>developments in Europe from the Renaissance to the close of the Napoleonic Wars. Not open to</td>
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<td>history majors who have taken HY 101-102.</td>
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<tr>
<td>392</td>
<td>Europe Since 1815</td>
<td>3 hrs.</td>
<td>A study of Europe from the end of the Napoleonic Wars to the present with equal emphasis on</td>
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<td>the nineteenth and twentieth centuries. Prerequisite: HY 391 or approval of instructor.</td>
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<td></td>
<td>Not open to history majors who have taken HY 101-102.</td>
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<tr>
<td>Courses</td>
<td>listed below are open to students who have</td>
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<tr>
<td>listed</td>
<td>completed 15 semester hours in history or</td>
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<tr>
<td>below</td>
<td>12 semester hours in history with senior</td>
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<td>standing.</td>
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<tr>
<td>413</td>
<td>The Old South</td>
<td>3 hrs.</td>
<td>A study of southern society, economics, politics and culture concentrating on the nineteenth-</td>
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<td>century South through Reconstruction.</td>
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<tr>
<td>414</td>
<td>The New South</td>
<td>3 hrs.</td>
<td>A study of the post-Reconstruction South emphasizing the economic, social, and political</td>
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<td>readjustments made during the twentieth century.</td>
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<tr>
<td>424</td>
<td>The Atlantic World</td>
<td>3 hrs.</td>
<td>A survey in a comparative framework of the West European colonial empires from 1500 to</td>
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<td></td>
<td>Character of slavery and the plantation colonies, the impact of the old world on the new,</td>
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<td>the maturation of the old colonial systems.</td>
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<tr>
<td>426</td>
<td>Colonial America</td>
<td>3 hrs.</td>
<td>A study of the development of political, religious, and economic institutions in the United</td>
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<td>States, 1607-1763.</td>
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<tr>
<td>427</td>
<td>The Age of the American Revolution</td>
<td>3 hrs.</td>
<td>A study of political, economic, military, social, and cultural developments in the revolution-</td>
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<td>ary period of American history, 1763-1789.</td>
</tr>
<tr>
<td>428</td>
<td>The Early American Republic</td>
<td>3 hrs.</td>
<td>A study of political, social, and economic changes in the United States and its sections from</td>
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<td>the adoption of the Constitution to the Compromise of 1850.</td>
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<tr>
<td>437</td>
<td>The Transformation of the American Republic</td>
<td>3 hrs.</td>
<td>A study of the nationalization and modernization of the United States from the period of the</td>
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<td>Civil War through the Populist movement.</td>
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<tr>
<td>438</td>
<td>Modern America</td>
<td>3 hrs.</td>
<td>A study of American society focusing on social and cultural change, reform, imperialism,</td>
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<td>and economic trends from the depression of the 1890s to the outbreak of World War II.</td>
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<tr>
<td>439</td>
<td>Recent American History</td>
<td>3 hrs.</td>
<td>A study of contemporary America from World War II to the present analyzing both domestic and</td>
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<td>foreign affairs.</td>
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<tr>
<td>473</td>
<td>The High Middle Ages</td>
<td>3 hrs.</td>
<td>A study of the political, economic, and cultural features of Europe when medieval civilization</td>
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<td>was at its height.</td>
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<tr>
<td>474</td>
<td>The Renaissance and Reformation</td>
<td>3 hrs.</td>
<td>A study of Europe during the Renaissance and Reformation with emphasis upon political, social,</td>
</tr>
<tr>
<td></td>
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<td>economic, and cultural developments.</td>
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</tbody>
</table>
The Age of Absolutism 3 hrs.
A study of Europe from the Edict of Nantes to the Peace of Utrecht with emphasis on political, cultural, and scientific change.

The Ancien Régime and the Enlightenment 3 hrs.
A study of European intellectual and social movements from the Peace of Utrecht to the outbreak of the French Revolution.

The French Revolution and Napoleon 3 hrs.
A study of European ideas, institutions, and events from the beginning of the French Revolution to the demise of the Napoleonic Empire.

Europe in the Nineteenth Century 3 hrs.
A study of major political, social, economic, and intellectual developments in Europe from the Congress of Vienna to World War I.

Europe in the Twentieth Century 3 hrs.
A study of major developments in Europe from 1914 to the present, including the two world wars and post-war reconstruction.

Research Seminar in History 3 hrs.
Historiography, research and writing, and recent interpretations in the field of history. Open only to seniors who are majoring or minoring in history.

Courses at the 500 level are open to students who have completed 15 semester hours in history or 12 semester hours with senior standing. Those numbered 500-599 have the same basic content as their undergraduate (400 level) counterpart, with the exception that the graduate student will be given additional assignments and attention appropriate to graduate level study.
605 Recent Interpretations in Modern History 3 hrs.
614 Studies in Southern History 3 hrs.
618 Studies in Early American History 3 hrs.
619 Studies in Nineteenth Century American History 3 hrs.
620 Studies in Twentieth Century American History 3 hrs.
650 Research Methods in History 3 hrs.
655 Studies in British History 3 hrs.
656 Studies in French History 3 hrs.
657 Studies in Russian and Soviet History 3 hrs.
670 Studies in Medieval History 3 hrs.
680 Studies in Early Modern Europe 3 hrs.
690 Studies in Modern Europe 3 hrs.
699 Master’s Thesis 3 hrs.

Philosophy (PHL)

101 Introduction to Philosophy 3 hrs.
An introduction to the discipline 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.

202 Introduction to Ethics 3 hrs.
Major ethical positions in both classical and modern thought.

204 Comparative Religions: Judaism, Christianity, Islam 3 hrs.
An analytical and comparative study of three of the world’s major religions: Judaism, Christianity, Islam. The origins, developments, traditions, and beliefs of these religions are compared and contrasted.

301 Ancient Philosophy 3 hrs.
Survey of classical philosophy from the Pre-Socratics through Aristotle. Prerequisite: PHL 101 or permission of the instructor.

302 Modern Philosophy 3 hrs.
Survey of the British and Continental traditions from Descartes through Kant. Prerequisite: PHL 101 or permission of the instructor.

303 Contemporary Philosophy 3 hrs.
Examination of some of the most important trends in late nineteenth and twentieth century thought. Prerequisite: PHL 101 or permission of the instructor.

310 Philosophy of Art 3 hrs.
Major aesthetic theories of the western tradition, with emphasis on the relation between artistic and discursive expression. Prerequisite: PHL 101 or permission of the instructor.

311 Philosophy of Science 3 hrs.
Critical assessment of the historical and logical foundations of the natural and theoretical sciences. Prerequisite: PHL 101 or permission of the instructor.
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>312</td>
<td>American Philosophy</td>
<td>3 hrs.</td>
<td>Survey of American thought with emphasis upon the development of pragmatism in the work of Peirce, James, and Dewey. Prerequisite: PHL 101 or permission of the instructor.</td>
</tr>
<tr>
<td>316</td>
<td>Classical Political Philosophy</td>
<td>3 hrs.</td>
<td>Historical survey and philosophical analysis of fundamental ideas of representative thinkers in Western political theory to Machiavelli. (Same as PSC 316).</td>
</tr>
<tr>
<td>317</td>
<td>Modern Political Philosophy</td>
<td>3 hrs.</td>
<td>Historical survey and philosophical analysis of fundamental ideas of representative thinkers in Western political theory from Machiavelli. (Same as PSC 317).</td>
</tr>
<tr>
<td>320</td>
<td>Symbolic Logic</td>
<td>3 hrs.</td>
<td>Symbolic deductive logic, including propositional calculus (truth-functional logic), predicate calculus (propositional functions and quantification), and the logic of relations. Prerequisite: PHL 201.</td>
</tr>
<tr>
<td>321</td>
<td>Ethics and the Professional</td>
<td>3 hrs.</td>
<td>Investigation of fundamental problems of conduct as they appear in medicine, law, and business. Prerequisite: PHL 101, PHL 202, or permission of the instructor.</td>
</tr>
<tr>
<td>385</td>
<td>Selected Topics in the History of Philosophy</td>
<td>3 hrs.</td>
<td>Intensive examination of particular problems, periods, or movements in the history of philosophy. Prerequisite: Determination in accordance with course content.</td>
</tr>
<tr>
<td>401</td>
<td>Metaphysics</td>
<td>3 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>402</td>
<td>Epistemology</td>
<td>3 hrs.</td>
<td>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.</td>
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</tbody>
</table>
Music Department

Professors Boyer (chairman), Pales; Assistant Professors Contreras, Crabb, Graves; Adjunct Instructors Dodson, Griffin.

Courses for the General Student (Non-Music Majors)

In addition to providing degree programs in music and music education, the Department of Music faculty has developed a variety of opportunities for instruction in music-making and study for students majoring in other disciplines. All students are encouraged to include at least one music experience in their elective or humanities requirements. The following courses and ensembles are open to all university students with little or no musical experience required. Upper-level credit is available for some courses. Students may receive studio instruction (private lessons) in voice and in nearly every musical instrument.

MU 100 Fundamentals of Music
MU 110 Introduction to Music Listening
MU 111 Popular Music in America: Beginnings to 1950
MU 112 Popular Music in America: 1950 to the Present
MU 210 Music with the Maestro
MU 215 Music for the Young Child
MU 310 American Music
MU 190/390 UAH Choir
MU 192/392 Huntsville Village Singers
MU 198/398 Huntsville Symphony Orchestra
MU 199/399 UAH Wind Ensemble
MU 290 Opera/Music Theatre Workshop
MU 296 Pep Band
MU 297 Jazz Ensemble

Music Major

The major in music, with emphasis in either performance or music literature, is a degree program of 134 credit hours providing ample training and experience in performance and sufficient foundations in theory and literature. It is built upon the belief that a liberal arts base prepares the musician and musician-teacher well. The degree provides the foundation most students need for graduate study and many professional musical opportunities. To minimize degree hours, a music major should choose a minor from the disciplines represented in GER. There is opportunity for a variety of discipline mixtures with the music major thus accommodating students with dual interests and abilities.

Music Education Major

The major in music education is a 140-credit hour degree program built upon a broad liberal arts base, integrating 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 or major 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) and music reading, performance (principal or major instrument or voice) and piano. Deficiencies can be removed through remedial instruction.

I. General Education Requirement

GER for the B.A. degree are listed in the academic information section. For performance and literature emphasis programs, at least one course in philosophy should be selected for the social science requirement and Spanish, French, or German for the language requirement. For music education emphasis students must select at least one course in economics for the social science requirement; option C or D to satisfy their science-mathematics requirements; and three hours HPE courses to include either CPR or Nutrition.

II. Area of Concentration (select A or B) Maximum: 70 hrs.

A. Music Performance or Literature Emphasis

Major
MU 1-3 Principal Instrument* (as terms; 8 hours upper level) .................. 16
MU 1-0/2-0 Secondary Instrument (6 terms) ........................................ 4
MU 101, 102, 201, 202, 203 Theory-Harmony .................................. 10
MU 104, 105, 204, 205, 206 Musicianship Skills ............................... 5
MU 110 Introduction to Music Listening ........................................... 3
MU 311, 312 Music History ............................................................ 6
MU 401 Twentieth-Century Materials and Techniques ....................... 3

*Students electing the music literature emphasis will be limited to 12 hours rather than 20 hours of studio instruction. Eight hours of appropriate upper-level music literature and history courses replace studio work. Other special projects replace junior and senior recitals.

MU 325 Conducting ................................................................. 2
Upper-level music elective ......................................................... 2
Ensembles** ........................................................................... 3-6
Junior recital ........................................................................... 0
Senior recital ........................................................................... 0

Minor
Selected minor from a discipline represented in the GER.

B. Music Education Emphasis (Composite Major-Minor)

Music Performance, Theory, and Literature
MU 1-0/4-0 Principal Instrument (12 terms; 4 hours upper level) .................. 8
Junior recital (solo and ensemble works) .................................................. 0
Secondary instrument(s): (6 terms) ............................................................... 4
  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** ................................................................. 3-6

MU 101, 102, 201, 202, 203 Theory-Harmony ........................................... 10
MU 104, 105, 204, 205, 206 Musicianship Skills ....................................... 5
MU 110 Introduction to Music Listening ..................................................... 3
MU 311, 312 Music History ................................................................. 6
MU 401 Twentieth-Century Materials and Techniques ................................ 3
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 ........ 2
or
MUE 429 Organizing and Directing Instrumental Groups
  in Secondary Schools ........................................................................ 2

Professional Education
AHS 100 The Art of Being Human ............................................................. 3
ED 230 Human Development .................................................................... 3
ED 261 Foundations of Education in U.S. ............................................... 3
ED 263 Educational Psychology .............................................................. 3

**An appropriate ensemble must be selected each term student is enrolled
full-time. Students must complete a minimum of twelve terms of small and large
ensemble experiences; however, a maximum of 6 hours may count toward degree.

ED 408 Teaching Reading in the Secondary School .................................... 3
ED 410 Foundations of Educational Evaluation ......................................... 3
ED 490 Principals of High School Teaching ............................................ 3
ED 499 N-12 Internship** ................................................................... 9
ED 593 Education of Exceptional Children and Youth ............................. 3

***Students must pass a piano competency examination before internship. ED 490
must be taken concurrently with internship.
III. Electives (outside of AOC areas) 6-20 hrs.

Minimum: performance and music literature, 12 hours; music education 6 hours.

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.

To meet university requirements select a minimum of 18 hours, 15 of which must be upper level from the following:

MU 101, 102, 201 Theory of Music .......................................................... 6
MU 104, 105, 204 Musicianship Skills ...................................................... 3
MU 110 Introduction to Music Listening ..................................................... 3
MU 310 Survey of American Music ............................................................ 3
MU 312 Music History II ............................................................................. 3
MUE 326 Teaching General Music in Elementary School ........................... 3
(Replacement for MU 215 in the GER)
MU 390 or 391 Ensemble ........................................................................... 6

The curriculum, including music, may require more than 140 hours for the degree.

Minor in Music

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 advisers from departments involved. Generally 25 hours of music are necessary (3 hours upper-level), including the following courses:

MU 1-0/2-0 Studio Instruction .................................................................... 4
MU 101, 102, 201 Theory-Harmony ........................................................... 6
MU 104, 105, 204 Musicianship Skills ......................................................... 3
MU 110 Introduction to Music Listening ...................................................... 3
MU 312 History of Music II ......................................................................... 3
Ensemble .................................................................................................... 6

Music (MU) 24 hrs.

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 is a remedial course and 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 formal analysis. Appropriate Musicianship skills (e.g. MU 104) to be taken concurrently throughout theory program. Prerequisite: approval of instructor.

102 Theory of Music II 2 hrs.
Continuation of MU 101. Prerequisites: MU 101 and 104.
104 Musicianship Skills I
To be taken concurrently with MU 101 and designed to complement written theoretical studies. Exercises in sight singing using solfege, numbers, or neutral syllables. Basic conducting (beat patterns), rhythmic execution and melodic, harmonic, and rhythmic dictation. Prerequisite: approval of instructor.

105 Musicianship Skills II
Continuation of MU 104. Prerequisites: MY 101 and 104.

110 Introduction to Music Listening
Basic appreciation course. Exploration of ideas and issues in various types of Western music through reading, listening and discussion.

111 Popular Music in America: Beginnings to 1950
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
Basic appreciation course. History of Rock and Roll, with some time spent on folk and jazz music of the period. Related socio-economic, demographic, and technological factors, with extra emphasis on the decade of the 1960's.

201 Theory of Music III
Continuation of studies on a more advanced basis than MU 101-102. Prerequisite: MU 102 and 105.

202 Theory of Music IV
Continuation of MU 201. Prerequisites: MU 201 and 204.

203 Theory of Music V
Continuation of MU 202. Prerequisites: MU 202 and 205.

204 Musicianship Skills III
Continuation of MU 105. Prerequisites: MU 102 and 105.

205 Musicianship Skills IV
Continuation of MU 204. Prerequisites: MU 201 and 204.

206 Musicianship Skills V
Continuation of MU 205. Prerequisites: MU 202 and 205.

210 Music with the Maestro
Survey of music masterpieces, (e.g. Beethoven 5th Symphony, Stravinsky "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. Taught by conductor of the Huntsville Symphony Orchestra.

304 Analysis of Music Form
Analysis of representative small and large compositions of the sixteenth through the twentieth centuries for structure and form. Prerequisite: MU 201, 110, or approval of instructor. Offered upon demand.

310 American Music
A course 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.

311 History of Music I
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. Prerequisite: MU 201, 204, 110, or approval of instructor.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>312</td>
<td>History of Music II</td>
<td>3 hrs.</td>
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<td></td>
<td>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 201, 204, 110, or approval of instructor.</td>
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<tr>
<td>313</td>
<td>Survey of a Musical Form</td>
<td>3 hrs.</td>
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<td>A musical form (e.g., concerto, opera, etc.) from its origins to present time. Variable topics. Prerequisites: MU 203, and 311 or 312.</td>
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<tr>
<td>314</td>
<td>Biographical Survey</td>
<td>3 hrs.</td>
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<td></td>
<td>Life and work of great composers of music. Variable topics. Prerequisites: MU 203, and 311 or 312.</td>
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<tr>
<td>320</td>
<td>Piano Pedagogy</td>
<td>2 hrs.</td>
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<td></td>
<td>Materials, techniques, and practices in teaching beginners and students through lower advanced grades of piano. Practical experience. Prerequisite: approval of instructor. Offered upon demand.</td>
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<tr>
<td>321</td>
<td>Piano Technology</td>
<td>1 hr.</td>
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<td>Development of keyboard instruments, use of equal-temperament tuning, and minor piano action regulation, and repair. Offered upon demand. Prerequisite: ability to read music and familiarity with keyboard.</td>
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<tr>
<td>325</td>
<td>Conducting</td>
<td>2 hrs.</td>
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<td>Basic techniques of choral and instrumental conducting. Prerequisites: MU 201, 204, or approval of instructor.</td>
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<tr>
<td>401</td>
<td>Twentieth Century Materials and Techniques</td>
<td>3 hrs.</td>
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<td></td>
<td>Systems of tonal organizations, compositional procedures, terminology, and analytical methods that relate to music of our century. Prerequisites: MU 203, 206, 312, or approval of instructor.</td>
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<tr>
<td>410</td>
<td>Piano Literature</td>
<td>2 hrs.</td>
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<td></td>
<td>Music for string keyboard instruments from the pre-pianoforte period to the present. Representative works from all periods. Prerequisites: MU 203, 206, 312 or permission of instructor. Offered upon demand.</td>
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<tr>
<td>411</td>
<td>Musicum Practicum</td>
<td>1 hr.</td>
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<td></td>
<td>Courses of study and activity developed by the student(s) and submitted to music faculty for approval. Projects to reinforce learning and performance experiences. May be repeated, but no more than 2 hours count toward degree requirements.</td>
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<tr>
<td>416</td>
<td>Orchestration</td>
<td>2 hrs.</td>
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<td></td>
<td>Instruments of the band and orchestra, their ranges, transpositions, and capabilities. Practical experience in arranging for instruments. Prerequisites: MU 203, 206.</td>
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<tr>
<td>425</td>
<td>Advanced Conducting</td>
<td>2 hrs.</td>
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<td>Review of basic conducting patterns. Emphasis on communication as the role of the conductor. Detailed score preparation and marketing. Prerequisite: MU 325.</td>
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<tr>
<td>510</td>
<td>Concert Band Literature and Conducting Critique</td>
<td>3 hrs.</td>
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<td>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; senior or permission of instructor.</td>
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<tr>
<td>511</td>
<td>Master Class in Piano Literature and Pedagogy</td>
<td>2 hrs.</td>
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<td>Topic of course varies: Examination of selected forms.</td>
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Applied Studio and Class Instruction

Students must fill out a "Request for Studio Instruction" card obtained in the Music Department before each term they are enrolled. Transfer students who plan to take private instruction for music credit must demonstrate their level of proficiency to the instructor before registration. Instruction varies from forty to sixty minutes weekly.

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. Students not intending to major or minor in music should enroll in MU 130, 140, 150, 160, or 170 and do not require a jury. They may repeat private instruction as long as the instructor agrees that satisfactory progress is made. A special studio instruction fee is charged (see Fees).

Students taking studio instruction must attend performances, the monthly student recital program and special performance classes. A student can be excused only with written permission of department chairman.

As part of studio instruction, students enrolled as full-time music majors must attend at least six approved concerts a term; other students enrolled in studio instruction must attend three.

130 Studio Instruction in Keyboard (piano and organ)\(^1\) 2/3 hr.
Prerequisite: approval of instructor. Studio instruction fee: Level 6.

230 Studio Instruction in Keyboard\(^2\) 2/3 hr.
Prerequisite: MU 130 and approval of instructor. Studio instruction fee: Level 6.

330 Studio Instruction in Keyboard\(^2\) 2/3 hr.
Prerequisite: MU 230 and approval or instructor. Studio instruction fee: Level 6.

430 Studio Instruction in Keyboard\(^2\) 2/3 hr.
Prerequisite: MU 330 and approval of instructor. Studio instruction fee: Level 6.

131, 132, 133, 231, 232, 233, 331, 332, 333, 431, 432, 433 Studio Instruction in Keyboard 1 1/3 hr.
For principal instrument music credit. Studio instruction fee: Level 8. Prerequisite: approval of instructor.

140 Studio Instruction in Voice\(^1\) 2/3 hr.
Prerequisite: approval of instructor. Studio instruction fee: Level 6.

240 Studio Instruction in Voice\(^2\) 2/3 hr.
Prerequisite: MU 140 and approval of instructor. Studio instruction fee: Level 6.

340 Studio Instruction in Voice\(^2\) 2/3 hr.
Prerequisite: MU 240 and approval of instructor. Studio instruction fee: Level 6.

440 Studio Instruction in Voice\(^2\) 2/3 hr.
Prerequisite: MU 340 and approval of instructor. Studio instruction fee: Level 6.

141, 142, 143, 241, 242, 243, 341, 342, 343, 441, 442, 443 Studio Instruction in Voice 1 1/3 hr.
For principal instrument music credit. Studio instruction fee: Level 8. Prerequisite: approval of instructor.
150 Studio Instruction in String (orchestral strings and guitar)\(^1\) 2/3 hr.
Prerequisite: approval of instructor. Studio instruction fee: Level 6.

250 Studio Instruction in Strings\(^2\) 2/3 hr.
Prerequisite: MU 150 and approval of instructor. Studio instruction fee: Level 6.

350 Studio Instruction in Strings\(^2\) 2/3 hr.
Prerequisite: MU 250 and approval of instructor. Studio instruction fee: Level 6.

450 Studio Instruction in Strings\(^2\) 2/3 hr.
Prerequisite: MU 350 and approval of instructor. Studio instruction fee: Level 6.

151, 152, 153, 251, 252, 253, 351, 352, 353, 451, 452, 453
Studio Instruction in Strings 1 1/3 hr.
For principal instrument music credit. Studio instruction fee: Level 8. Prerequisite: approval of instructor.

154, 254 Class Instruction in Strings 2/3 hr.
For secondary instrument, music education emphasis students. Studio instruction fee: Level 6.

160 Studio Instruction in Woodwinds\(^1\) 2/3 hr.
Prerequisite: approval of instructor. Studio instruction fee: Level 6.

260 Studio Instruction in Woodwinds\(^2\) 2/3 hr.
Prerequisite: MU 160 and approval of instructor. Studio instruction fee: Level 6.

360 Studio Instruction in Woodwinds\(^2\) 2/3 hr.
Prerequisite: MU 260 and approval of instructor. Studio instruction fee: Level 6.

460 Studio Instruction in Woodwinds\(^2\) 2/3 hr.
Prerequisite: MU 360 and approval of instructor. Studio instruction fee: Level 6.

161, 162, 163, 261, 262, 263, 361, 362, 363, 461, 462, 463
Studio Instruction in Woodwinds 1 1/3 hr.
For principal instrument music credit. Studio instruction fee: Level 8. Prerequisite: approval of instructor.

164, 264 Class Instruction in Woodwinds 2/3 hr.
For secondary instrument music education emphasis students. Studio instruction fee: Level 6.

170 Studio Instruction in Brass\(^1\) 2/3 hr.
Prerequisite: approval of instructor. Studio instruction fee: Level 6.

270 Studio Instruction in Brass\(^2\) 2/3 hr.
Prerequisite: MU 170 and approval of instructor. Studio instruction fee: Level 6.

370 Studio Instruction in Brass\(^2\) 2/3 hr.
Prerequisite: MU 270 and approval of instructor. Studio instruction fee: Level 6.

470 Studio Instruction in Brass\(^2\) 2/3 hr.
Prerequisite: MU 370 and approval of instructor. Studio instruction fee: Level 6.

Studio Instruction in Brass 1 1/3 hr.
For principal instrument music credit. Studio instruction fee: Level 8. Prerequisite: approval of instructor.

\(^1\)For music education emphasis, secondary instrument, or non-music credit. Course may be repeated.

\(^2\)For music education emphasis or secondary instrument credit. Course may be repeated.
Class Instruction in Brass
For secondary instrument, music education emphasis students. Studio instruction fee: Level 6.

Studio Instruction in Percussion
Prerequisite: approval of instructor. Studio instruction fee: Level 6.

Studio Instruction in Percussion
Prerequisite: MU 180 and approval of instructor. Studio instruction fee: Level 6.

Studio Instruction in Percussion
Prerequisite: MU 280 and approval of instructor. Studio instruction fee: Level 6.

Studio Instruction in Percussion
Prerequisite: MU 380 and approval of instructor. Studio instruction fee: Level 6.

Studio Instruction in Percussion
For principal instrument music credit. Studio instruction fee: Level 8. Prerequisite: approval of instructor.

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 program. Students may continue to enroll, however, and repeatedly participate in ensembles throughout their university life. 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.

UAH Choir
Mixed voices singing the serious choral repertoire. Open to all students by audition. Required attendance at rehearsals and performances.

Huntsville Village Singers
A select small ensemble of mixed voices. Open to all students by audition. Required attendance at rehearsals and performances.

Summer Chorus
Mixed voices singing a variety of choral music.

Music for Awhile Ensemble
Solo-ensemble performance specializing in early and contemporary music.

Chamber Ensembles
Discussion, evaluation, and performance of literature available for selected small musical ensembles. Piano trios, quartets, quintets, string quartets, woodwind, brass, percussion, and vocal ensembles.

For music education emphasis, secondary instrument, or non-music credit. Course may be repeated.

For music education emphasis or secondary instrument credit. Course may be repeated.
197 Summer Band 1 hr.
Rehearsal and performance of a variety of music for concert band. By audition with 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 conductor. Required attendance at rehearsals and performances.

199, 399 UAH Wind Ensemble 1 hr.
Open to all students by audition with conductor. Preparation and performance of the finest music literature for wind ensemble and concert band. Required attendance at all 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: Elementary music reading and intermediate singing ability. Required attendance at rehearsals and performances.

297 UAH Jazz Ensemble 1 hr.
Open to all students by permission of the director. This group provides the participant with the opportunity 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 by 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.
A course 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 MU 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 201, 110, or approval of instructor.

326 Teaching General Music in Elementary Schools 3 hrs.
Materials and methods. Emphasis on developing teaching competencies. Prerequisites: MU 201, 204, 110 or permission of instructor.

327 Teaching General Music in Secondary Schools 3 hrs.
Materials and methods. Emphasis on developing teaching competencies. Prerequisites: MU 201, 204, 110 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 and MU 425 or permission of instructor.

429 Organizing and Directing Instrumental Groups in Secondary Schools 2 hrs.
Repertoire, procedures for administering and teaching school bands, orchestras and instrumental ensembles. Prerequisites: MUE 326, 327 and MU 425 or permission of instructor.
520 Arts in the Elementary School Curriculum 3 hrs.
An interdisciplinary approach to teaching the arts in elementary school, including music, movement, theater, 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 hrs
Philosophical base of music education, its justification in public schools, and criteria for determining its objectives. Application of aesthetic theory to analysis and evaluation of music.
Political Science and Criminal Justice Department

Professor Meek; Associate Professors MacDougall, Williams (Chairman); Assistant Professors Brown, Hazlett, Randall; Adjunct Assistant Professors Accardi, Rice, Vizzini, Adjunct Instructor Bill.

The Department of Political Science and Criminal Justice offers undergraduate majors and minors in political science and criminal justice. In addition, the department offers graduate courses as part of the public administration option in the Master of Administrative Science program.

General Education Requirements

Criminal justice courses may not be used to fulfill social science general education requirements. Although all political science courses may be used for general education requirements, it is recommended that two courses be chosen from PSC 101, PSC 135, PSC 182, PSC 221, PSC 223, PSC 246, and PSC 271.

Area of Concentration (AOC) With Political Science Major

A student who wishes to major in political science must include in his academic program a minimum of 36 semester hours in political science, including PSC 101, 135, 246, 311 and either 316 or 317 (15 hours). In addition, majors are required to take a minimum of three (3) hours from each of four fields of political science: International Relations and Comparative Government (PSC 336, 337, 338, 343, and 465); Law and Theory (PSC 271, 318, 371, 471); Sub-National Politics and Administration (PSC 221, 223, 323, 350, 423, and 450); and Political Process and Institutions (PSC 307, 308, 365, 369). The remaining nine (9) hours may be taken as electives from the above courses or other political science courses. A minimum of 15 semester hours must be in political science courses numbered 300 or above.

GER should include MA 105 (College Algebra) unless placement indicates Level II or above. Additional courses required that may be counted as electives on the AOC are AHS 300, ARH 109, and MU 110.

A student with a major in political science must choose a minor from another discipline; or, instead of a minor, the student has the option of choosing 21 hours of cognate studies, a group of courses drawn from two or more disciplines of which 9 hours must be in upper-level course work.

Freshmen considering a major in political science should consult with a faculty advisor in the department during their freshman year. Sophomores must file an AOC declaration before the end of their sophomore year. Transfer students are advised to consult with a faculty member in 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.

Minor in Political Science

The student with a minor in political science must take 21 hours of course work including PSC 101, 135 and 246, and at least 6 hours of course work 300 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 an AOC leading to endorsements in political science and/or the social sciences can be developed.

Area of Concentration (AOC) with Criminal Justice Major

A student who wishes to major in criminal justice must include a minimum of 36 semester hours of criminal justice or criminal justice-related courses. Required criminal justice courses are CJ 101, CJ 231, CJ 271, CJ 311, CJ 320, CJ 341, CJ 371, and CJ 461. The remaining 12 hours will include at least one course from each of the following areas: (a) PSC 221 or PSC 350, (b) SOC 319 or SOC 350, (c) PY 375 or PY 433, and either a second course from the previous areas or CJ 390, CJ 399, or CJ 495. GER should include MA 105 (College Algebra) unless placement tests indicate Level II or above. Additional required courses that may be counted as electives on the AOC are AHS 300 and either ARH 100, ARH 101, ARH 109 or MU 110.

Freshmen considering a major in criminal justice should consult with a faculty adviser in the program during their freshman year. Transfer students should consult with a faculty member in the program before scheduling courses at UAH. Sophomores must file an AOC declaration before the end of their sophomore year. The AOC provides the student an opportunity to develop an academic program that meets his interests and objectives. Guidelines for curriculum planning in criminal justice are available in the Department of Political Science and Criminal Justice.

A student developing an area of concentration with a criminal justice major must choose a minor consisting of 21 semester hours from a discipline other than criminal justice. Recommended disciplines are psychology, sociology, political science, or management. Instead of a minor, the student may choose 21 hours in cognate studies, a group of courses from two or more disciplines of which 9 hours must be in upper-level course work.

Minor in Criminal Justice

Students seeking to minor in criminal justice must have 21 hours of criminal justice course work, including CJ 101 and six hours of courses numbered 300 and above.

Internship Programs

The Department of Political Science and Criminal Justice has an internship program for majors and minors in political science, criminal justice, public administration, and prelaw. Internships bridge the gap between learning experience and entry into professional life. Interested juniors and seniors should apply to the Department of Political Science and Criminal Justice.

Graduate Courses in Political Science

The department offers political science courses as a part of the Public Administration Option in the Master of Administrative Science program. MAS students in the Public Administration Option are required to take fifteen hours of 600 level courses including PSC 650 and 655.
Certificate Program in Criminal Justice
The Certificate Program in Criminal Justice is intended primarily for in-service law enforcement and corrections officers and persons preparing for work in the field of criminal justice. The Certificate in Criminal Justice will be awarded upon completion of 21 hours of required coursework (CJ 101, CJ 231, CJ 271, CJ 320, CJ 341, CJ 371 and CJ 461). Students interested in the Criminal Justice Certificate Program must make formal application to the Director of the Criminal Justice Program.

Political Science (PSC)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>135</td>
<td>Introduction to Comparative Government</td>
<td>3 hrs.</td>
<td>Surveys the political cultures, governmental structures, and contemporary policy problems of parliamentary, communist and third world political systems.</td>
</tr>
<tr>
<td>182</td>
<td>Issues in U.S. and World Politics</td>
<td>3 hrs.</td>
<td>Outstanding problems confronting America and/or world political systems. (For students who are not majors or minors in Political Science.)</td>
</tr>
<tr>
<td>221</td>
<td>State and Local Government</td>
<td>3 hrs.</td>
<td>Introduction to state and local politics in America. Different governmental forms and their impact on public policies.</td>
</tr>
<tr>
<td>223</td>
<td>Alabama and Southern Politics</td>
<td>3 hrs.</td>
<td>Surveys the government and politics of Alabama and provides an overview of the political culture in the American South.</td>
</tr>
<tr>
<td>246</td>
<td>Introduction to International Relations</td>
<td>3 hrs.</td>
<td>Examinations 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.</td>
</tr>
<tr>
<td>271</td>
<td>Introduction to American Legal Systems</td>
<td>3 hrs.</td>
<td>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. (Same as CJ 271.)</td>
</tr>
<tr>
<td>280</td>
<td>Special Topics in Political Science</td>
<td>1-3 hrs.</td>
<td>Study of selected topics in local, state, national and world politics.</td>
</tr>
<tr>
<td>307</td>
<td>Congress and State Legislatures</td>
<td>3 hrs.</td>
<td>The American legislative process. Institutional setting and process of decision-making, recruitment and socialization of legislators, and relationships between Congress and the remainder of the political system.</td>
</tr>
<tr>
<td>308</td>
<td>American Presidency</td>
<td>3 hrs.</td>
<td>The role of the president in the American political system. Special emphasis is placed upon internal functioning of executive branch of government through analysis of structure and techniques of the national administration.</td>
</tr>
<tr>
<td>311</td>
<td>Research and Analysis</td>
<td>3 hrs.</td>
<td>Philosophy and logic of scientific inquiry. Data, bibliographic sources and useful techniques in data analysis, including an introduction to simple computing. Required of all students majoring in political science and criminal justice. (Same as CJ 311). Lab fee: Level 3. Prerequisite: AHS 300.</td>
</tr>
</tbody>
</table>
316 Classical Political Philosophy 3 hrs.
Historical survey and philosophical analysis of fundamental ideas of representative thinkers in western political theory to Machiavelli. (Same as PHL 316)

317 Modern Political Philosophy 3 hrs.
Historical survey and philosophical analysis of fundamental ideas of representative thinkers in western political theory from Machiavelli. (Same as PHL 317)

318 American Political Thought 3 hrs.
Main currents in American political thought from its European antecedents to contemporary times.

323 American Federalism 3 hrs.
Function and importance of federalism and intergovernmental relations in the American political system. Role of the state, local and regional governments as partners in the federal arrangement.

336 Parliamentary Systems 3 hrs.
Introduction to the governments and political systems of western European democracies. Considers their socio-economic contexts and accounts for their similarities and differences in terms of historical and contemporary economic, social, and cultural factors.

337 Communist Systems 3 hrs.
Examination of Marxist theory in various national settings. Attention is focused on evolution of Communist regimes and parties in different states in relation to temporal and environmental challenges.

338 Third World Systems 3 hrs.
Study of growth and decay of third world nations, their socio-economic problems and their political responses to the requirements of economic and social change.

343 International Law and Organization 3 hrs.
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.

350 Public Administration 3 hrs.
Administrative principles and practices in public organizations and agencies.

365 Public Opinion and Elections 3 hrs.
Examination of theories of electoral behavior and their utility in understanding voter decision making. The formulation, manipulation, and impact of public opinion on American politics are assessed.

369 Political Parties and Interest Groups 3 hrs.
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.

371 American Constitutional Law 3 hrs.
The policy-making role of the Supreme Court in the American political system through analysis of leading cases in interpreting the constitution.

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 SOC 100 or PSC 101. (Same as SOC 382.)

399 Directed Study in Political Science 1-3 hrs.
Independent studies in an area of political science selected in consultation with faculty advisor. Approval of chairman required.
Urban Politics 3 hrs.  Examination of urban politics in America with attention given to urban problems, urban environment, governmental forms, power structures, and policy outputs.

Public Bureaucracy 3 hrs.  An examination of the institutional and environment factors shaping governmental bureaucracy and the application of private organizational theory to the bureaucracy.

American Foreign Policy 3 hrs.  Study of the institutions, processes and personalities affecting the formation of American foreign policy.

Civil Liberties 3 hrs.  Judicial interpretations of contemporary questions involving rights of individuals and limits of freedom of action in American society.

Special Topics in Political Science 1-3 hrs.  Study of selected topics in local, state, national and world politics.

Internship in Government 1-6 hrs.  Undergraduates may receive from one 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.

Special Topics in Political Science 1-3 hrs.  Study of selected topics in local, state, national and world politics.

Studies in Public Administration 1-3 hrs.  Special studies and projects in Public Administration.

Studies in Political Science 1-3 hrs.  Special studies and projects in political science. Approval of chairman required.

Courses listed below are primarily for graduate students in the Administrative Science Program.

Intergovernmental Relations 3 hrs.


Public Personnel Administration 3 hrs.

Budgetary Process 3 hrs.

Public Policy Determination 3 hrs.

Administrative Law and Regulations 3 hrs.

Special Topics in Public Administration 1-3 hrs.

Internship in Government 1-6 hrs.

Criminal Justice (CJ)

Introduction to Criminal Justice 3 hrs.  Survey of the criminal justice system including philosophical and historical background.

Introduction to Law Enforcement 3 hrs.  Overview of policing theory and practices and the role of police. Emphasis is on policing issues created by competing demands of law enforcement.
271 Introduction to the American Legal System 3 hrs.
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. (Same as PSC 271.)

311 Research and Analysis 3 hrs.
Philosophy and logic of scientific inquiry. Data, bibliographic sources and useful techniques in data analysis, including an introduction to simple computing. Required of all students majoring in political science and criminal justice. (Same as PSC 311.) Lab fee: Level 3. Prerequisite: AHS 300.

320 Criminal Behavior 3 hrs.
Theories of criminal behavior and criminal control procedures. Causation, criminal and chancery laws, and crime control by police, criminal and juvenile courts. (Same as SOC 320.)

341 Institutional and Community Corrections 3 hrs.
Overview of corrections and punishment of offenders at the federal, state and local level. Emphasis on practices and policies of prisons, local detention, probation and parole, community diversion, and alternatives to incarceration.

371 Legal Aspects of the Criminal Justice System 3 hrs.
Review of the principles and offenses in substantive criminal law; legal procedures and requirements placed upon criminal justice personnel in applying criminal sanctions.

390 Selected Topics in Criminal Justice 3 hrs.
Study of selected topics in local, state, federal and world systems of criminal justice.

399 Directed Studies in Criminal Justice 1-3 hrs.
Independent studies in an area of criminal justice selected in consultation with a faculty advisor. Prerequisite: Approval of chairman.

461 Critical Issues in Criminal Justice 3 hrs.
Overview of theoretical and policy issues directly involving criminal justice practices and procedures, including crime control in a democracy, policing, criminal adjudication, and correctional alternatives.

495 Criminal Justice Internship 1-6 hrs.
Academic credit for an internship with an agency or institution involved in the administration of justice. Permission of chairman required.
Psychology Department
Professor Rogers; Associate Professors Coffield, Hays, James, Sullins (chairman); Associate Professor of Human Development Kirkpatrick.

General Education Requirements
The 6 hour Social Sciences GER may be satisfied by taking PY 103 and any one of the following: PY 203, PY 207, PY 215 or PY 375.

Area of Concentration (AOC) with Psychology Major
A student who majors in psychology must include a minimum of 36 semester hours in psychology with at least 15 hours of these courses numbered 300 or above. Required courses are PY 103, 302, AHS 300, and two human research courses.

The psychology major described above will form a part of an AOC which must include one of the following variations: (1) an established minor from one department now offering a major that includes a minimum of 21 semester hours, 6 hours of which must be numbered 300 or above; (2) a minor from a discipline other than those currently offering a major that includes a minimum of 21 semester hours, 6 hours of which must be numbered 300 or above; (3) an area of cognate studies from two or more disciplines that include a minimum of 21 semester hours, 9 hours of which must be in courses numbered 300 or above.

A student planning to major in psychology should take PY 103 and 302 before entering more advanced courses. As soon as these courses are completed, the student should seek advice in planning an AOC from a faculty member in the Psychology Department.

A composite major with emphasis in human growth and development may be earned in conjunction with the Departments of Sociology and Psychology, and the Developmental Learning Program.

Psychology for Second Area of Study
A student majoring in elementary education may choose psychology as his second area of study. See major requirements in Education section.

To meet university requirements, a student should seek a minimum of 18 hours, 15 of which must be upper level, from courses listed below with the help of the psychology education faculty adviser and approval of the chairman of the Department of Psychology. This curriculum may require more than the minimum total of 128 hours for the degree.

Psychology Minor
A student using psychology as a minor (variation No. 1 above) must include 21 hours of psychology courses, including PY 103 and AHS 300. Appropriate psychology courses may also form part of an area of cognate studies with other disciplines to support the student’s major. Such a program must be approved by the chairman of the student’s major department and must meet requirements established in variation No. 3 above.

Graduate Program
For information on the graduate program in developmental psychology, see the UAH Graduate Catalog.
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>General Psychology</td>
<td>3 hrs.</td>
<td>Empirical findings of major areas of psychology. General methodology, development, personality, and abnormal and social psychology.</td>
</tr>
<tr>
<td>207</td>
<td>Psychology of Personal Adjustment</td>
<td>3 hrs.</td>
<td>Application of basic principles in psychology to origin and resolution of personal conflicts. Prerequisite: PY 103.</td>
</tr>
<tr>
<td>215</td>
<td>Child Psychology</td>
<td>3 hrs.</td>
<td>Overview of information, topics, viewpoints and issues in child psychology with professional and personal applications. Prerequisite: PY 103.</td>
</tr>
<tr>
<td>302</td>
<td>Experimental Psychology</td>
<td>3 hrs.</td>
<td>Design and execution of experiments in psychology. Data analysis and manuscript preparation. Course includes laboratory. Fee: Level 3. Prerequisite: 6 hours PY and AHS 300.</td>
</tr>
<tr>
<td>311</td>
<td>Individual Differences</td>
<td>3 hrs.</td>
<td>Factors, both learned and innate, that lead to individually unique patterns of behavior. Prerequisite: PY 103.</td>
</tr>
<tr>
<td>315</td>
<td>Developmental Psychology</td>
<td>3 hrs.</td>
<td>General theories and experimental findings about the sensory-motor, cognitive, emotional and moral growth and learning of individuals. Prerequisite: PY 103.</td>
</tr>
<tr>
<td>330</td>
<td>Psychology of Communication</td>
<td>3 hrs.</td>
<td>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 findings of modes, media, and effects of various communication forms. Prerequisite: PY 103. (Same as CM 330).</td>
</tr>
<tr>
<td>375</td>
<td>Social Psychology</td>
<td>3 hrs.</td>
<td>The fundamental principles of group behavior. Development of group solidarity, cohesion, intergroup conflict and cooperation, and effects of different patterns of leadership. Prerequisite: SOC 100 or PY 103. (Same as SOC 375).</td>
</tr>
<tr>
<td>390</td>
<td>Readings in Psychology</td>
<td>3 hrs.</td>
<td>Supervised in-depth readings in area of particular interest to student. Prerequisite: 15 hours PY and approval of instructor. May be taken twice for credit.</td>
</tr>
<tr>
<td>391</td>
<td>Special Topic in Psychology</td>
<td>1 hr.</td>
<td>Study of preannounced special areas in seminar discussion, laboratory work, or practicum. Prerequisite: 15 hours PY. May be taken twice for credit.</td>
</tr>
<tr>
<td>392</td>
<td>Special Topic in Psychology</td>
<td>2 hrs.</td>
<td>Study of preannounced special areas in seminar discussion, laboratory work, or practicum. Prerequisite: 15 hours PY. May be taken twice for credit.</td>
</tr>
<tr>
<td>401</td>
<td>Personality</td>
<td>3 hrs.</td>
<td>Examination of various theories of personality with possible implications for research. Prerequisite: PY 103.</td>
</tr>
<tr>
<td>410</td>
<td>Human Research: Developmental</td>
<td>4 hrs.</td>
<td>Effects of environment upon cognitive and social development in humans and animals. Includes laboratory. Fee: Level 3. Prerequisite: PY 302, 315.</td>
</tr>
</tbody>
</table>
Human Research: Motivation and Emotion 4 hrs.
Motivational and emotional dynamics relating to stress, depression, anxiety, and pleasure. Includes laboratory. Fee: Level 3. Prerequisite: PY 302.

Human Research: Personality 4 hrs.
Basic problems, procedures, and theoretical issues involved in personality research. Includes laboratory. Fee: Level 3. Prerequisite: PY 302, 401.

Topics in social psychology as applied to situations of practical interest. Includes laboratory. Fee: Level 3. Prerequisite: PY 302 or SOC 300 and PY/SOC 375.

Human Research: Learning 4 hrs.
Analysis of learning principles from simple procedures with animals to the complexities of human language and problem-solving. Includes laboratory. Fee: Level 3. Prerequisite: PY 302.

Seminar in Psychology 3 hrs.
Presentation and discussion of reports on psychological problems within a particular area. Prerequisite: 15 hours PY and approval of instructor. May be taken twice for credit.

Individual Research 3 hrs.
With advice of instructor, design and execution of original experiment in psychology. Prerequisite: 15 hours PY and approval of instructor. May be taken twice for credit.

History and Systems in Psychology 3 hrs.
History of psychology as it has led to development of systematic study within the field. Prerequisite: 15 hours PY.

Abnormal and Health Psychology for the Human Service Professions 3 hrs.
Individual patterns and social contexts of integrative and maladaptive emotions and behavior. Prerequisite: PY 103.

Physiological Psychology 3 hrs.
Neural and endocrinological systems underlying behavior. Prerequisite (either a or b): (a) 15 hours of PY or approval of instructor; (b) BYS 114 or BYS 313 and 6 hours of PY or approval of instructor. (Same as BYS 436).

Industrial and Organizational Psychology 3 hrs.
Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems.

Advanced General Psychology 3 hrs.
Survey. Various major areas of psychology. Open only to senior psychology majors and graduate students. Prerequisite: 24 hours PY and senior standing.

Psychometrics 3 hrs.
History and development of psychological testing with special emphasis given to both theory and process of effective evaluation. Prerequisites: AHS 300.

Various assessment techniques; particular emphasis on the Stanford-Binet. Use of theory and practice. Includes laboratory. Fee: Level 3. Prerequisite: approval of instructor.

Individual Mental Testing: Wechsler 3 hrs.
Individual testing with Wechsler tests, along with practical experience. Includes laboratory. Fee: Level 3. Prerequisite: PY 531.

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.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>Advanced Developmental Psychology: I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>603</td>
<td>Advanced Developmental Psychology: II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>606</td>
<td>Language Development</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>611</td>
<td>Research Methods and Statistics I: Experimental Designs</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>613</td>
<td>Research Methods and Statistics II: Nonexperimental Designs</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>615</td>
<td>Graduate Seminar</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>628</td>
<td>Human Learning Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>629</td>
<td>Behavior Modification</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>641</td>
<td>Directed Individual Study and Research I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>643</td>
<td>Directed Individual Study and Research II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>655</td>
<td>Symbolic Processes</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>699</td>
<td>Master's Thesis</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>


Sociology Department
Associate Professors Haralick, Hodges, Tarter; Assistant Professors Colclough, Finley, (Acting chairman, Sullins.)

Area of Concentration (AOC) with Sociology Major
Requirements for a major are 36 hours of sociology including SOC 100, 102, 300, 465, and AHS 300. A minimum of 15 hours should be taken in courses numbered 300 or above.

Up to 6 hours of the 36 hours required for major may be satisfied by related courses in disciplines other than sociology. These courses must relate to a specific area of interest within the major and such courses may count toward the major only with approval of student’s faculty adviser.

A composite major with emphasis in human growth and development may be earned in conjunction with the Departments of Sociology and Psychology, and Developmental Learning Program

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 102. A minimum of 9 hours should be in courses numbered 300 or above. Supportive cognate studies that involve combinations of courses from disciplines other than sociology should be worked out with advice of sociology faculty.

Sociology for Second Area of Study
Students majoring in elementary education may select sociology as their second area of study. See major requirements in Education section. State-approved requirements for education cannot be finalized at this writing. They will be published as soon as available.

To meet university requirements, select a minimum of 18 hours, 15 of which must be upper level from course listed below with help of education faculty adviser and approval of chairman of the Department of Sociology. The following courses are especially useful for teachers: SOC 100, 102, 106, 305, 306, 310, 325, 330, 375, 452, and 490. This curriculum may require more than minimum total of 128 hours for the degree.

Sociology (SOC)

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Introduction to Sociology</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Perspective methods, concepts, and general findings of the sociologist. Historical and conceptual development of sociology.</td>
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</tr>
<tr>
<td>102</td>
<td>Analysis of Social Problems</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Sociological interpretation of contemporary social problems as they relate to significant trends in complex societies.</td>
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</tr>
<tr>
<td>106</td>
<td>Marriage and Family</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>The family as a social institution, its structure and function in contemporary societies, dating, marital interaction, life cycle, and socialization process.</td>
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</tr>
</tbody>
</table>

Lower-division sociology courses listed below are open to students who have completed SOC 100.
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 130).

200 Cultural Anthropology 3 hrs.
Origin and development of man's ways of life. Analysis of preliterate societies.

250 Introduction to Social Work 3 hrs.
Social case work, methods, functions, and services. Principal fields and areas of social work. No prerequisite.

Upper-division sociology courses are open to students who have taken SOC 100 and SOC 102 or have taken SOC 100 and have approval of instructor.

300 Research Methods 3 hrs.
Broad and balanced background in various types of social research methods. Fundamental logic and specific techniques in conducting research. AHS 300 is helpful but not required.

305 Urban Sociology 3 hrs.
Origin and growth of cities, demographic and spatial characteristics of communities, attitude and value systems in urban society, and impact of urbanization on institutional structures.

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, the school, peer group, and culture as they affect the growing child and early adolescent.

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.

315 Population and Ecology 3 hrs.
Growth and distribution of world population and environmental problems created in relation to population growth.

319 Deviance and Social Control 3 hrs.
Social construction of deviant behavior and societal reactions to it.

320 Criminal Behavior 3 hrs.
Criminal behavior and criminal control procedures. Causation, criminal, and chancery laws, and crime control by police and criminal or juvenile courts. (Same as CJ 320).

325 The Sociology of Education 3 hrs.
Education as a social institution; its structure, function, and role in contemporary life. (Same as ED 325).

330 Minority Groups 3 hrs.
Nature of minorities: status differentiation and group structure, institutional trends, and intergroup relations.

333 Sociology of the South 3 hrs.
The contemporary South focusing on unique social processes and cultural heritage leading to its development. Cultural diversity that underlies the belief systems of Southerners.
340 Special Topics 1-3 hrs.
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. Course may be taken more than once for credit as long as subtitles differ.

345 Social Gerontology 3 hrs.
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.

350 Social Stratification 3 hrs.
Social class, social status, and social mobility. Social power and prestige. Differential opportunities and resultant behaviors of upper, middle, and lower social classes.

359 Social Foundations of Revolutionary Change 3 hrs.
Role of revolution, violence, and extremist politics in social and political process. Major focus on American social movements.

375 Social Psychology 3 hrs.
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: PY 103 or SOC 100. (Same as PY 375).

380 The Sociology of Science and Technology 3 hrs.
Survey of the social forces that shape science and technology. Social implications of major scientific and technological developments. Attention is given to the role of social science in technology assessment and forecasting. Prerequisite: SOC 100 helpful but not required.

382 Political Sociology 3 hrs.
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.

385 Complex Organization 3 hrs.
Theory and structure of past and present complex organization on the large social structure. Military, industrial, and political bureaucracies.

390 Readings and Individual Research 3 hrs.
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 adviser's approval.

400 Applied Research Methods 3 hrs.
Fundamental procedures of planning and conducting applied research such as policy or program evaluation and secondary data analysis. Experimental designs, ethics in research and cost-benefit, cost-effective techniques. SOC 300 and AHS 300 helpful but not required. By invitation or approval of instructor.

420 The Sociology of Corrections and Rehabilitation 3 hrs.
Social variables in restructuring behavior of social offender. Basic problems faced by correctional institutions. (Same as CJ 420).

440 Sociology of Religion 3 hrs.
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.
450 Medical Sociology 3 hrs.
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.

452 Sociology of Mental Health 3 hrs.
Social construction of mental health and mental illness. Mental hospitals, community mental health center, and mental health movement.

455 Sociology of Work and Occupations 3 hrs.
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.

465 Sociological Theory 3 hrs.
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. Prerequisite: SOC 100, 102, and junior or senior standing.

480 The Sociology of the Future 3 hrs.
Major social trends that leading forecasters project for the next twenty-five years. Nature, methods, and outlook of modern social and technical forecasters. (A course for a variety of students. SOC 100 helpful but not required.)

490 Sociology of Poverty and Deprivation 3 hrs.
Poverty and deprivation as variables in social life. Social and psychological effects of deprivation and nature and effectiveness of programs to combat it. Offered on demand.

630 Industrial Sociology 3 hrs.
Development of modern work relations in an historical and dialectical framework. Consequences of modern work relations on cultural values such as democracy and individuality. Alternative work relations with attention to industrial sociology.
School of Engineering

Dean Richard G. Griskey, B.S., M.S., Ph.D., P.E. Professor of Chemical Engineering

Assistant Dean of Engineering Kenneth O. Thompson, B.S., B.A.E., B.B.A., M.S., Ph.D., Associate Professor of Mechanical Engineering and Director of Institutional Support Services.

Chemical Engineering
Professor Griskey; Professor Emeritus Grohse; Associate Professor Curry; Assistant Professors Rutzler; Smith

Civil Engineering
Professor Emeritus Kubitza; Adjunct Professor Hackett; Assistant Professor Kane.

Electrical and Computer Engineering
Professors Audeh, Biggs, Halijak, Johnson, Kheir, Polge (chairman); Adjunct Professors O’Reilly, Stern; Associate Professors Bugnolo, Ho, Thurstone; Assistant Professors Abushagur, Greene, Gupta, Marr, Mohadjer, Stensby; Instructor Jones

Industrial and Systems Engineering
Professors Brown (chairman), Wyskida; Associate Professors Lovett, Walker; Adjunct Associate Professors Dorsett, Lowe; Adjunct Assistant Professor Lawler; Instructor Howard

Mechanical Engineering
Professors Chung, Cogley (chairman), Hung, Karr, Liu, Shih, Wu; Professor Emeritus Hermann; Associate Professors Brainerd, Thompson, Wallace; Assistant Professors Bower, Lewis, Prasthofer

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 the human race. Those who desire to be part of this important effort can gain entry into the engineering profession by attending UAH.

The UAH School of Engineering is not only located in an urban area but 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 School 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 School of Engineering has made a strong commitment to the advising of both undergraduate and graduate students. As such, students are requested to contact the Dean's Office as soon as possible to be assigned an adviser.

Degrees and Programs

Bachelor of Science in Engineering degrees can be earned in chemical engineering, civil engineering, electrical and computer engineering, industrial and systems engineering and mechanical 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 Ph.D. in electrical and computer, industrial and systems, and mechanical engineering. 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 School 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 Minor

Students with nonengineering majors who choose a minor in engineering, must take a minimum of 21 hours in engineering courses selected with the assistance of an engineering adviser and approved by the chairman of one of the engineering departments.

Course Numbers

Course numbers are coded for engineering by prefixes as follows:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE</td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>ISE</td>
<td>Industrial and Systems Engineering</td>
</tr>
<tr>
<td>CHE</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering</td>
</tr>
</tbody>
</table>

Undergraduate Engineering Program

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 School of Engineering achieves this goal 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 junior and senior years in chemical engineering, civil engineering, electrical and computer engineering, industrial and systems engineering, or mechanical engineering. The electrical and computer 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.

A student will be awarded the degree of Bachelor of Science in Engineering upon successful completion of all course work requirement.

**High School Preparation, Prerequisite Courses, and Transfer Credit**

Students who intend to pursue the B.S.E. degree should carefully read the section Admission to the Freshman Class. Students who have had inadequate preparation or who are placed in certain lower-level classes because of results of placement tests may have to take one or more of the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH Remedial Writing</td>
<td>No credit</td>
</tr>
<tr>
<td>CH 101 General Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CH 105 General Chemistry Laboratory</td>
<td>1 hr.</td>
</tr>
<tr>
<td>MA 119 Precalculus I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MA 121 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 may not be applied toward the minimum requirement for the B.S.E.

Credit for engineering courses taken in schools with ABET accredited programs is transferrable 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. This has been applied to courses taken after September 1, 1979. All inquiries concerning applicability of credit should be made to the UAH engineering department chairman where the course or its equivalent is being taught.

Each student in the School 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 time required for graduation. Each student should seek counseling and advice from the appropriate department or from the office of the dean. A student enrolled in the Bachelor of Science in Engineering programs must successfully complete courses in each of the following six categories:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORTRAN Programming - ECE 197</td>
<td>3</td>
</tr>
<tr>
<td>Statics - ME 271</td>
<td>3</td>
</tr>
<tr>
<td>Nature and Properties of Materials - ME 294</td>
<td>4</td>
</tr>
<tr>
<td>Electrical Circuits I - ECE 300</td>
<td>3</td>
</tr>
</tbody>
</table>
Electronic Instrumentation Lab - ECE 301 ................................................. 1
Electronic Instrumentation - ECE 311 .................................................. 3
Engineering Economy - ISE 321 ............................................................... 3
Dynamics - ME 362 ............................................................................. 3
Introduction to Engineering Design - ECE/ME 493 ................................. 2

2. English composition - EH 101, 102 ....................................................... 6

3. Humanities and social sciences (15 hours)
   Engineering students are required to take a total of 15 semester hours (in addition to EH 101 and 102) in the humanities and social sciences, including EC 239 and AHS 392. The remaining 9 semester hours should be a balanced choice from the following areas: art, literature, history, music, philosophy, sociology, psychology, political science, geography, economics. 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, introductory language, and ROTC normally do not fulfill this objective regardless of their general value in the total engineering curriculum.

4. Mathematics (18 hours)
   Calculus and Analytic Geometry - MA 153, 154, 233, 251 ..................... 12
   Linear Algebra - MA 244 ..................................................................... 3
   Differential Equations - MA 352 .......................................................... 3

5. Basic Sciences (12 and additional hours)
   General Physics - PH 111, 112 .......................................................... 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 as listed below

   Chemical Engineering Option. 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.

   Semester Hours

   Additional Basic Sciences
   Chemistry - CH 123, 126, 223, 331, 332, 341, 342, 343 .......................... 20

   Chemical Engineering Option
   ME 198 - Engineering Graphics ......................................................... 2
   CHE 244 - Stoichiometry ................................................................. 3
   ME 341 - Thermodynamics I ............................................................. 3
   CHE 344 - Chemical Engineering Thermodynamics ............................ 3
ME 352 - Fluid Mechanics I .............................................3
ME 396 - Numerical Methods and Computations ......................2
CHE 440 - Unit Operations Laboratory ..................................3
ME 442 - Introduction to Heat and Mass Transfer ....................4
CHE 443 - Mass Transfer Operations .....................................3
CHE 445 - Chemical Process Control ....................................3
CHE 447 - Chemical Engineering Design I ..............................3
CHE 448 - Chemical Engineering Design II .............................3
CHE 541 - Chemical Kinetics and Reactor Design ....................3

Suggested Schedule of Courses for Full-time Chemical Engineering Students

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 101</td>
<td>3</td>
<td>ECE 197</td>
</tr>
<tr>
<td>MA 153</td>
<td>3</td>
<td>MA 233</td>
</tr>
<tr>
<td>CH 121 &amp; 125</td>
<td>4</td>
<td>CH 223</td>
</tr>
<tr>
<td>ME 198</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>CH 331</td>
<td>3</td>
<td>CHE 244</td>
</tr>
<tr>
<td>PH 111</td>
<td>4</td>
<td>EC 239</td>
</tr>
<tr>
<td>MA 251</td>
<td>3</td>
<td>MA 352</td>
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<tr>
<td>ME 271</td>
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<td>ME 362</td>
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<td>10</td>
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<tr>
<td>CH 341</td>
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<td>CH 342</td>
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<td>ME 341</td>
<td>3</td>
<td>ME 442</td>
</tr>
<tr>
<td>ME 294</td>
<td>4</td>
<td>CHE 344</td>
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<tr>
<td>ME 396</td>
<td>2</td>
<td>ISE 321</td>
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<tr>
<td></td>
<td></td>
<td>12</td>
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<tr>
<td>ECE 311 &amp; 301</td>
<td>4</td>
<td>CHE 445</td>
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<tr>
<td>CHE 443</td>
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<td>CHE 440</td>
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<td>ME 493</td>
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<tr>
<td>CHE 541</td>
<td>3</td>
<td>CHE 447</td>
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<tr>
<td></td>
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<td>12</td>
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</tbody>
</table>

Total Hours 134

*HU/SS: 9 hours in humanities/social sciences

Civil Engineering Option. Civil engineers plan, design, construct, maintain and operate public and private facilities. Included are transportation systems, bridges, and buildings, water supply, pollution control, irrigation and drainage systems, river and harbor improvement, and dams and reservoirs.

Semester Hours

Additional Basic Sciences

Chemistry - CH 123, 126 ..............................................4
Civil Engineering Option

CE 172 - Surveying I .............................................. 2
CE 173 - Surveying II ............................................... 2
ME 198 - Engineering Graphics ...................................... 2
ME 341 - Thermodynamics I ......................................... 3
ME 352 - Fluid Mechanics I ....................................... 3
ME 370 - Mechanics of Materials .................................. 4
CE 371 - Structural Analysis I .................................. 3
CE 372 - Soil Mechanics ............................................. 4
CE 373 - Reinforced Concrete Design ............................ 3
CE 374 - Structural Design .......................................... 3
CE 471 - Structural Analysis II .................................. 3
CE 472 - Hydraulic Engineering .................................... 3
CE 473 - Transportation Engineering and Design ................ 3
CE 475 - Hydrology .................................................. 2
CE 476 - Sanitary Engineering ...................................... 3
CE 477 - Civil Engineering Project I .............................. 1
CE 478 - Civil Engineering Project II ............................. 3

*Technical Electives .................................................. 6

* Choose from CE 375, 376, 478, ISE 390, ME 396, 449, 454, 455, 461, 474, 486 or from other upper-level courses approved by the Civil Engineering program chairman.

Suggested Schedule of Courses for Full-time Civil Engineering Students

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 121 &amp; 125</td>
<td>CH 123 &amp; 126</td>
<td>EH 102</td>
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<tr>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MA 153</td>
<td>EH 101</td>
<td>MA 233</td>
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<tr>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>ECE 197</td>
<td>MA 154</td>
<td>PH 111</td>
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<td>3</td>
<td>3</td>
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<tr>
<td>ME 198</td>
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<td>CE 172</td>
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<td>12</td>
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<tr>
<td>*Hu/SS</td>
<td>3</td>
<td>*Hu/SS</td>
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<td>3</td>
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<tr>
<td>MA 251</td>
<td>ME 271</td>
<td>EC 239</td>
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215
Electrical and Computer Engineering Option. The electrical and computer engineering option offers a background that enables a student to pursue careers in any of the many and diverse facets of electrical and computer 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 ...........................................2
Additional PH or CH ...........................................................................2

Electrical Engineering Option

ECE 202 - Introduction to Logic Design ..............................................3
ECE 297 Unix and C with EE applications .............................................2
ECE 313 and 303 - Electrical Circuits II and Lab ..................................4
ECE 315 and 305 - Electronics I and Lab .............................................4
ECE 307 - Electricity and Magnetism ....................................................3
ME 341 - Thermodynamics I ...............................................................3
ECE 382 - Analytical Methods for Continuous Time Systems ...............3
ECE 383 - Analytical Methods for Multivariable and Discrete Time .......3
ISE 390 - Probability and Engineering Statistics I ...............................3
ECE 425 - Automatic Control Theory ..................................................3
Electrical Engineering Electives* .......................................................15
*Technical Electives ............................................................................3

**ME 396 may be substituted for ECE 297.

*Technical course at level 300 or above.

Suggested Schedule of Courses for Full-time Electrical and Computer Engineering Students

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<tr>
<th>Fall</th>
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</tbody>
</table>

**Total hours 129**

*Hu/SS: 9 hours in humanities/social sciences.

**Engineering Core: 25 hours are common to all engineers.

***Physics or Chemistry beyond the 14 specified semester hours.

**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>
<thead>
<tr>
<th>Science Elective</th>
<th>Semester Hours</th>
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</table>

**Industrial Engineering Option**

- ME 198 - Engineering Graphics .................................................. 2
- ISE 326 - Production and Operation Systems I .................................. 3
- ISE 327 - Production and Operation Systems II .................................. 3
- ME 370 - Mechanics of Materials .................................................. 4
- ISE/ME 378 - Materials and Manufacturing Process ................................ 3
- ISE 390 - Probability and Engineering Statistics I .............................. 3
- ISE 424 - Introduction to Ergonomics: Work Development ........................ 3
- ISE 427 - Management Systems Analysis ............................................ 3
- ISE 428 - Systems Analysis and Design I .......................................... 2
- ISE 429 - Systems Analysis and Design II ......................................... 2
- ISE 490 - Probability and Engineering Statistics II ............................ 3
- AC 211 - Accounting I ................................................................. 3
- Industrial Engineering Electives .................................................... 9
- *Technical Electives ................................................................. 6

* Choose from ECE 202, 303/313, 305/315, ME 341, 352/353, ECE 382, ME 396, ECE 421, 425, 488, or other upper-level courses approved by the Department of Industrial and Systems Engineering.
# Suggested Schedule of Courses for Full-time Industrial and Systems Engineering Students

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<td>PH 112</td>
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</tbody>
</table>

*Hu/SS: 9 hours in humanities and social sciences.

**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.

**Total hours** 129
**Mechanical Engineering Option**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>ME 198</td>
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<td>ME 341</td>
<td>Thermodynamics I</td>
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<td>ME 352</td>
<td>Fluid Mechanics I</td>
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<td>Kinematics and Dynamics of Machines</td>
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<td>Mechanics of Materials</td>
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<td>ME/ISE 378</td>
<td>Materials and Manufacturing Processes</td>
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<tr>
<td>ME 396</td>
<td>Numerical Methods and Computations</td>
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<td>Introduction to Heat and Mass Transfer</td>
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<td>ME 445</td>
<td>Energy Conversion and Power Generation I</td>
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<td>ME 446</td>
<td>Design of Thermal Systems</td>
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<td>ME 454</td>
<td>Fluid Mechanics II</td>
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<td>ME 465</td>
<td>Engineering Design</td>
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<td>ME 466</td>
<td>Mechanics and Design of Machine Elements</td>
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<td>ME 488</td>
<td>Analysis of Engineering Systems</td>
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<tr>
<td>* Technical Electives</td>
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Total: 133

*Choose from ECE 307, 381, 425, ISE 326, 390, ME 444, 450, 455, 486, 496.

**Suggested Schedule of Courses for Full-time Mechanical Engineering Students**

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<tr>
<th>Fall</th>
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<td>3 ECE 311 &amp; 301</td>
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Total: 34

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Graduate Engineering Programs

The School of Engineering offers programs leading to the degrees of Master of Science in Engineering, Master of Science in Operations Research, and Doctor of Philosophy. Specializations for the M.S.E. and Ph.D. are in the following areas:

Electromagnetic Fields
Network Theory
Communications and Information Theory
Digital and Analog Computer Engineering
Control Sciences
Human Engineering
Engineering Management
Optical Engineering
Operations Research
Thermodynamics, Heat and Mass Transfer
Energy/Power
Systems Engineering
Environmental Engineering
Applied Mechanics
Solar Terrestrial Environment System
Solid State Electronics
Materials Engineering
Manufacturing Systems Engineering

Detailed information on the above graduate degrees is presented in the Graduate Catalog of the University of Alabama in Huntsville.

Engineering

Chemical Engineering (CHE)

244 Stoichiometry 3 hrs.
Introduction to basic calculations of chemical engineering, emphasizing material and energy balances on physical and chemical processes. Prerequisites: PH 112, CH 123, ECE 197.

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

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. Lab fee: Level 4. 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)

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.

220
445 Chemical Process Control 3 hrs.
Fundamental principles of chemical process control; control system design for chemical processes. Lab fee: Level 4. Prerequisites: MA 352, 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. Lab fee: Level 1. 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. Lab fee: Level 3. Prerequisites: CHE 447, 441.

541 Chemical Kinetics and Reactor Design 3 hrs.
(Same as CHE 441)

641 Advanced Thermodynamics 3 hrs.
(Same as ME 641)

649 Transport Phenomena 3 hrs.
(Same as ME 649)

657 Advanced Process Control 3 hrs.

658 Catalysis and Reactor Design 3 hrs.

Civil Engineering (CE)

172 Surveying I 2 hrs.
Use of tape, level and transit with applications to planimetric and topographic mapping, traverse and area computations, stadia and construction surveys. Laboratory work included. Lab fee: Level 3. Prerequisite: ME 198 or consent of instructor.

173 Surveying II 2 hrs.

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

372 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. Lab fee: Level 3. Prerequisites: ME 352, 370.

373 Reinforced Concrete Design 3 hrs.
Design of reinforced concrete structures with emphasis on the ultimate strength method. Aspects of prestressed concrete design; computer applications. Prerequisite: CE 371.

374 Structural Design 3 hrs.
Principles of design of structures. Analysis and design of structural elements including beams, columns, connection details. Prerequisite: CE 371.

375 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 352.
376 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. Lab fee: Level 3. Prerequisite: CE 375.

471 Structural Analysis II 3 hrs.

472 Hydraulic Engineering 3 hrs.
Water-hammer analysis; hydraulic structures such as dams, spillways, stilling basins, flood control devices, locks, pipe-flow systems and water-supply facilities. Prerequisite: ME 352.

473 Transportation Engineering and Design 3 hrs.
Theory, design, and operation of various modes of transportation. Prerequisites: CE 173, 372.

475 Hydrology 2 hrs.
Hydrologic cycles, rainfall and runoff analysis, hydrograph analysis, water-shed studies, overland flow and flood routing, sediment transport, hydrologic forecast. Prerequisite: ME 352.

476 Sanitary Engineering 3 hrs.

477 Civil Engineering Project I 1 hr.
Individualized design project under supervision of instructor. Prerequisite: senior standing.

478 Civil Engineering Project II 3 hrs.
Analysis and design of complete civil engineering project including establishment of design criteria, cost estimates, specifications, and plans. Prerequisite: CE 477.

579 Selected Topics in Civil Engineering  Credit to be arranged

676 Inelastic Behavior of Materials and Structures 3 hrs.

678 Mechanics of Composite Materials 3 hrs.

772 Theory of Structural Stability 3 hrs.

773 Theory of Shells 3 hrs.

778 Fracture Mechanics 3 hrs.

Electrical and Computer Engineering (ECE)

197 Computer Methods in Engineering 3 hrs.
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. Lab fee: Level 4. Prerequisite: MA 121.

199 Computer Graphics 1 hr.
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. Lab fee: Level 3. Prerequisites: a course in FORTRAN or BASIC and MA 153.
202 Introduction to Digital Logic Design 3 hrs.
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: ECE 197.

297 Unix and C with EE Applications 2 hrs.
C and the Unix philosophy; basic graphics for data display; arithmetic error sources; matrices; simulation of passive electronic components; simulation of digital logic; solution of equations; interpolation and extrapolation; other topics. Uses campus mainframe computer, the ECE undergraduate graphics laboratory, the ECE computer laboratory, and ACCESS classroom. This course may not be used in conjunction with ME 396 for credit toward an ECE degree. Prerequisite: PH 112. Prerequisite or parallel: ECE 202, MA 244. Lab fee: Level 5.

300 Electrical Circuits I 3 hrs.
Electric and magnetic 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 352.

301 Electronic Instrumentation Laboratory 1 hr.
Experiments related to elementary electronic instrumentation, solid state semiconductor devices, amplifying circuits, and experiments using analog computer. Must parallel ECE 311. Lab fee: Level 3.

303 Electrical Engineering Laboratory 1 hr.
Experiments related to electrical circuits and to apply and verify principles presented in ECE 313. Lab fee: Level 3. Prerequisite or parallel: ECE 313 and ECE 301.

305 Electronics Laboratory I 1 hr.
Experiments and reports related to amplifiers using bipolar JFET, MOSFFT devices. Original design of individual circuits. Lab fee: Level 3. Prerequisite: ECE 301 and must parallel ECE 315.

307 Electricity and Magnetism 3 hrs.
Basic concepts of electrostatics, electric potential theory, electric fields and currents, fields of moving charge including relativistic treatment, magnetic fields, Maxwell’s equations. Prerequisite: MA 244, PH 112.

Basic physical processes occurring in solids. Crystal structure of solids, Schrodinger equation and its applications, free electron model of metals, band theory of solids, and physics of semiconductor devices. Prerequisite: PH 113, ME 294, and MA 352 or parallel.

311 Electronic Instrumentation 3 hrs.
Ammeters, voltmeters, and bridges. Transducers, diode and transistor models, operational amplifiers, simple digital and analog instrumentation, introduction to analog computers. Prerequisites: ECE 300 and must parallel ECE 301.

313 Electrical Circuits II 3 hrs.
Steady-state response to sinusoidal driving functions, polyphase circuits, transfer functions, resonance, magnetically coupled circuits; basic concepts of network topology and analysis, matrix formulation of network equations: algorithms. Prerequisite: ECE 382 or parallel.

315 Electronics I 3 hrs.
Analysis of large and small signal electronic devices; piece-wise linear models of bipolar and FET devices; amplifiers and their frequency response, power supplies, and special circuit applications, computer simulation. Prerequisites: ECE 311, 313 prerequisite or parallel, and must parallel ECE 305.
382 Analytical Methods for Continuous Time Systems 3 hrs.

383 Analytical Methods for Multivariable and Discrete Time Systems 3 hrs.
Discrete time signals and systems, sampling techniques, Z and discrete Fourier transforms, multivariable systems. Introduction to digital signal processing. Prerequisite: ECE 382.

402 Design of Digital Computer 3 hrs.
Functional organization of stored-program digital computers including number representation, computer hardware, micro-operations, and control logic; microprocessor architecture. Prerequisites: ECE 202, 315.

404 Electrical Networks Laboratory 1 hr.
Experiments that apply and verify principles presented in ECE 382 and 414. Lab fee: Level 3. Prerequisite or parallel: ECE 414.

406 Electronics Laboratory II 1 hr.
Experiments and reports related to electronic devices such as oscillators, multi-stage amplifiers, modulation and switching circuits. Integrated circuits and microelectronics methods. Lab fee: Level 3. Prerequisite: ECE 305 and must parallel ECE 416.

407 Electromagnetic Waves 3 hrs.
Transient waves, steady-state waves on transmission lines, Smith chart, line matching, plane waves, and waveguides. Laboratory experiments included. Lab fee: Level 2. Prerequisites: ECE 307 (PH 331).

410 Selected Topics in Electrical and Computer Engineering 1 hr.
Credit to be arranged.

411 Electric Power System 3 hrs.
Power generation, transmission, and distribution. Three-phase circuits and per unit analysis, load-flow studies, symmetrical components, and power systems stability. Prerequisite: ECE 313.

412 Senior Design Project in Electrical and Computer Engineering 2 hrs.
Continuation of ME 493 leading to design of an engineering system. Lab fee: Level 2. Prerequisites: ME 493, senior standing, and permission of instructor.

414 Passive Electrical Networks 3 hrs.
Driving point and transfer functions, frequency response of network, filter theory, and approximation for idealized network characteristics. Prerequisite: ECE 313.

416 Electronics II 3 hrs.
Integrated circuits and microdevices related to multistage amplifiers, oscillators, design specifications, operational amplifiers, and microcircuits. Computer Simulation. Prerequisites: ECE 310, 313, and 315.

421 Electric Machines 3 hrs.
Direct and alternating current machines equivalent circuits and models, efficiency, input requirements and output characteristics, applications: graphical and mathematical aspects of electrical machines. Prerequisite: ECE 313. (Same as ECE 501)

422 Advanced Logic Circuits 3 hrs.
Boolean algebra; the n-cube, star array, Karnaugh arrays; one-to-one transformations, partial transformations, DON'T CARES: symmetric switching function synthesis and reduction with applications to multiple input adders; generator theory of flip-flops and stability condition; serial arithmetic and the binary comparator. Prerequisite ECE 202. (Same as ECE 502)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>423</td>
<td>Analog and Hybrid Simulation</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Principles of analog, digital, and hybrid</td>
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<tr>
<td></td>
<td>computation. Analog components for addition,</td>
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<td></td>
<td>multiplication, integration, and function</td>
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<td></td>
<td>generation. Analog computer simulation of</td>
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<td></td>
<td>systems represented by linear and nonlinear</td>
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<tr>
<td></td>
<td>differential equation. Analog-digital (Hybrid)</td>
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<tr>
<td></td>
<td>simulation techniques. Laboratory sessions.</td>
<td></td>
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<tr>
<td></td>
<td>Lab fee: Level 3. Prerequisites: ECE 311 and 382</td>
<td></td>
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<tr>
<td></td>
<td>or MA 352. (Same as ECE 503)</td>
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<tr>
<td>424</td>
<td>Instrumentation</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Measurement techniques and conventional and</td>
<td></td>
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<tr>
<td></td>
<td>electronic instruments. Construction, theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of operation, and proper use of bridge circuits,</td>
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<tr>
<td></td>
<td>oscilloscope transducers, and digital instruments.</td>
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<tr>
<td></td>
<td>Prerequisite: ECE 315. (Same as ECE 504)</td>
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</tr>
<tr>
<td>425</td>
<td>Automatic Control Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Theory common to all feedback control systems.</td>
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<td></td>
<td>Transfer functions, stability criteria, and</td>
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<tr>
<td></td>
<td>frequency response. Prerequisite; ECE 382 or ME</td>
<td></td>
</tr>
<tr>
<td></td>
<td>488. (Same as ECE 505)</td>
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<tr>
<td>426</td>
<td>Communication Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Transmission of information including effects of</td>
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<td>networks, modulation systems, noise, and use</td>
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<tr>
<td></td>
<td>of statistics in analysis of information</td>
<td></td>
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<tr>
<td></td>
<td>transmission. Prerequisite: ECE 382. (Same as</td>
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<tr>
<td></td>
<td>ECE 506)</td>
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</tr>
<tr>
<td>429</td>
<td>Microcomputers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>The microcomputers as a component in digital</td>
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<tr>
<td></td>
<td>design. Laboratory experience in interfacing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and design projects. Lab fee: Level 3. Prerequisites: ECE 202 and 315; ECE 436 recommended. (Same as ECE 509)</td>
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<tr>
<td>436</td>
<td>Digital Electronics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Electronic devices. Integrated-circuit logic</td>
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<tr>
<td></td>
<td>families (DTL, TTL, etc.) and their design</td>
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<td></td>
<td>theory. MOSFET circuits and their design theory.</td>
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<tr>
<td></td>
<td>Flip-flop, registers and counters. Arithmetic</td>
<td></td>
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<td></td>
<td>operations. Semi-conductor memories. Analog</td>
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<tr>
<td></td>
<td>switches. Analog-to-digital conversion. Prereqi</td>
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</tr>
<tr>
<td></td>
<td>sites: ECE 202 and 315. (Same as ECE 516)</td>
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<tr>
<td>439</td>
<td>Digital Electronics Laboratory</td>
<td>1 hr.</td>
</tr>
<tr>
<td></td>
<td>Experiments and reports related to logic circuit</td>
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<tr>
<td></td>
<td>realization of digital hardware. RTL, DI, TT,</td>
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<td></td>
<td>ECI families for combinational and sequential</td>
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<td></td>
<td>switching circuits. Lab fee: Level 4. Must</td>
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<tr>
<td></td>
<td>parallel ECE 436. (Same as ECE 519)</td>
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</tr>
<tr>
<td>493</td>
<td>Introduction to Engineering Design</td>
<td>2 hrs.</td>
</tr>
<tr>
<td></td>
<td>Application of basic design principles and</td>
<td></td>
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<td></td>
<td>concepts. Design methodology, decision making,</td>
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<td></td>
<td>creativity, product liability, human factors,</td>
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<td></td>
<td>patents, and others. Team design projects.</td>
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<tr>
<td></td>
<td>Prerequisite: ECE 300, ISE 321, and ME 362.</td>
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<td></td>
<td>(Same as ME 493)</td>
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<tr>
<td>501</td>
<td>Electric Machines</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>(Same as ECE 421)</td>
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<tr>
<td>502</td>
<td>Advanced Logic Circuits</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>(Same as ECE 422)</td>
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<tr>
<td>503</td>
<td>Analog and Hybrid Simulation</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>(Same as ECE 423)</td>
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<tr>
<td>504</td>
<td>Instrumentation</td>
<td>3 hrs.</td>
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<td>(Same as ECE 424)</td>
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<tr>
<td>505</td>
<td>Automatic Control Theory</td>
<td>3 hrs.</td>
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<td></td>
<td>(Same as ECE 425)</td>
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<tr>
<td>506</td>
<td>Communication Theory</td>
<td>3 hrs.</td>
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<td>(Same as ECE 426)</td>
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<td>Course</td>
<td>Title</td>
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<tr>
<td>509</td>
<td>Microcomputers</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>(Same as ECE 429)</td>
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</tr>
<tr>
<td>510</td>
<td>Selected Topics in Electrical and Computer Engineering</td>
<td>Credit to be arranged</td>
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<tr>
<td>512</td>
<td>Advanced Senior Design Project</td>
<td>3 hrs.</td>
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<tr>
<td>516</td>
<td>Digital Electronics</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>(Same as ECE 436)</td>
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<tr>
<td>519</td>
<td>Digital Electronics Laboratory</td>
<td>1 hr.</td>
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<tr>
<td></td>
<td>(Same as ECE 439)</td>
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<tr>
<td>595</td>
<td>Microprocessor Development Systems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>600</td>
<td>Bit-Slice Design</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>601</td>
<td>Linear Systems</td>
<td>3 hrs.</td>
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<tr>
<td>602</td>
<td>Digital Computer Design</td>
<td>3 hrs.</td>
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<tr>
<td>603</td>
<td>Computer Methods in Power Systems</td>
<td>3 hrs.</td>
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<tr>
<td>604</td>
<td>Digital Image Processing</td>
<td>3 hrs.</td>
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<td>605</td>
<td>Control System Design</td>
<td>3 hrs.</td>
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<td>606</td>
<td>Statistical Communications Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>608</td>
<td>Electromagnetic Field Theory I</td>
<td>3 hrs.</td>
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<tr>
<td>609</td>
<td>Electromagnetic Field Theory II</td>
<td>3 hrs.</td>
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<tr>
<td>610</td>
<td>Selected Topics in Electrical Engineering</td>
<td>Credit to be arranged</td>
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<tr>
<td>612</td>
<td>Graduate Design Project</td>
<td>3 hrs.</td>
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<tr>
<td>613</td>
<td>Laser Electronics</td>
<td>3 hrs.</td>
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<tr>
<td>614</td>
<td>Linear Graphs and Electrical Networks</td>
<td>3 hrs.</td>
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<tr>
<td>615</td>
<td>Active Networks Synthesis</td>
<td>3 hrs.</td>
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<tr>
<td>616</td>
<td>Microelectronic Devices and Integrated Circuits</td>
<td>3 hrs.</td>
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<tr>
<td>617</td>
<td>Very Large Scale Integration Devices</td>
<td>3 hrs.</td>
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<tr>
<td>619</td>
<td>Introduction to Radar Systems</td>
<td>3 hrs.</td>
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<tr>
<td>699</td>
<td>Master’s Thesis</td>
<td>3 or 6 hrs.</td>
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<tr>
<td>700</td>
<td>Sampled Data Control Systems</td>
<td>3 hrs.</td>
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<tr>
<td>701</td>
<td>Advanced Linear Control Theory</td>
<td>3 hrs.</td>
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<tr>
<td>702</td>
<td>Theory of Automata</td>
<td>3 hrs.</td>
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<tr>
<td>704</td>
<td>Nonlinear Control Systems</td>
<td>3 hrs.</td>
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<tr>
<td>705</td>
<td>Theory of Optimal Control</td>
<td>3 hrs.</td>
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</table>
**Information Theory** 3 hrs.  
**Digital Signal Processing** 3 hrs.  
**Selected Topics in Electrical Engineering** Credit to be arranged.  
**Antenna Theory** 3 hrs.  
**Digital Filters with Switched Capacitors** 3 hrs.  
**Device Modeling for Integrated Circuit Design** 3 hrs.  
**Microwave Techniques** 3 hrs.  
**Advanced Electromagnetic Field Theory** 3 hrs.  
**Decision and Estimation Theory** 3 hrs.  
**Doctoral Dissertation** 3-6 hrs.  

**Industrial and Systems Engineering (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: EC 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. Lab fee: Level 2. Prerequisites: MA 154, ECE 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. Lab fee: Level 2. Prerequisites: ISE 326, ISE 390.

378 **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 362, 370. (Same as ME 378)

390 **Probability and Engineering Statistics I** 3 hrs.  
Engineering uses of probability theory, discrete and continuous probability distributions including the binomial, Poisson, hypergeometric, Gaussian, uniform, gamma, beta, log-normal, exponential, and extreme value distributions. Applications of statistical sampling, estimation, and hypothesis testing of means, variances, and proportions. Prerequisite or parallel: MA 251.

424 **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. Lab fee: Level 3. Prerequisites: ISE 390; ISE 327 or graduate standing. (Same as ISE 524)

427 **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. Prerequisites: ISE 326, 390.

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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>428</td>
<td>Systems Analysis and Design I</td>
<td>2 hrs.</td>
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<tr>
<td></td>
<td>Philosophy and methods of industrial and nonindustrial systems analysis and design. Methods of systems definition, analysis, simplification, evaluation, and optimization. Design project required. Prerequisite: ISE 440 and senior standing.</td>
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<tr>
<td>429</td>
<td>Systems Analysis and Design II</td>
<td>2 hrs.</td>
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<td></td>
<td>Continuation of design project begun in ISE 428. Prerequisite: ISE 428.</td>
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<tr>
<td>430</td>
<td>Metal Processing and Metrology</td>
<td>3 hrs.</td>
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<td></td>
<td>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. Lab fee: Level 3. Prerequisite: ME 370 and senior standing.</td>
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<tr>
<td>439</td>
<td>Selected Topics in Industrial and Systems Engineering</td>
<td>Credit to be arranged</td>
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<tr>
<td>490</td>
<td>Probability and Engineering Statistics II</td>
<td>3 hrs.</td>
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<td></td>
<td>Continuation of EG 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.</td>
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<tr>
<td>522</td>
<td>Logistics Planning and Control</td>
<td>3 hrs.</td>
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<tr>
<td>523</td>
<td>Statistical Quality Control</td>
<td>3 hrs.</td>
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<tr>
<td>524</td>
<td>Introduction to Ergonomics: Work Development</td>
<td>3 hrs.</td>
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<tr>
<td>526</td>
<td>Design and Analysis of Experiments</td>
<td>3 hrs.</td>
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<tr>
<td>530</td>
<td>Modern Manufacturing/Production Systems</td>
<td>3 hrs.</td>
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<tr>
<td>539</td>
<td>Selected Topics in Industrial Engineering</td>
<td>Credit to be arranged</td>
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<tr>
<td>547</td>
<td>Introduction to Digital Simulation</td>
<td>3 hrs.</td>
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<tr>
<td>571</td>
<td>System Simulation Laboratory I-GPSS</td>
<td>2 hrs.</td>
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<td>572</td>
<td>System Simulation Laboratory II - SIMAN</td>
<td>2 hrs.</td>
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<tr>
<td>573</td>
<td>Systems Simulation Laboratory III</td>
<td>2 hrs.</td>
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<tr>
<td>620</td>
<td>Engineering Management I</td>
<td>3 hrs.</td>
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<td>622</td>
<td>Research and Development Management</td>
<td>3 hrs.</td>
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<tr>
<td>623</td>
<td>Engineering Economic Analysis</td>
<td>3 hrs.</td>
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<tr>
<td>624</td>
<td>Advanced Ergonomics: Man-Machine Interfaces</td>
<td>3 hrs.</td>
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<tr>
<td>626</td>
<td>Introduction to Operations Research</td>
<td>3 hrs.</td>
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<td>627</td>
<td>Introduction to Systems Engineering</td>
<td>3 hrs.</td>
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<td>628</td>
<td>Engineering Management II</td>
<td>3 hrs.</td>
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<td>630</td>
<td>Automation: Numeric Control to Computer-Aided Manufacturing</td>
<td>3 hrs.</td>
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<td>631</td>
<td>Management Information Systems</td>
<td>3 hrs.</td>
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<td>Course Code</td>
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<td>632</td>
<td>Stochastic Systems</td>
<td>3 hrs.</td>
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<tr>
<td>633</td>
<td>Industrial Forecasting and Analysis I</td>
<td>3 hrs.</td>
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<tr>
<td>634</td>
<td>Value and Decision Theory</td>
<td>3 hrs.</td>
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<tr>
<td>635</td>
<td>Linear Programming</td>
<td>3 hrs.</td>
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<td>636</td>
<td>Systems Modeling</td>
<td>3 hrs.</td>
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<td>638</td>
<td>Engineering Reliability</td>
<td>3 hrs.</td>
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<tr>
<td>639</td>
<td>Selected Topics in Industrial and Systems Engineering</td>
<td>Credit to be arranged</td>
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<tr>
<td>647</td>
<td>Systems Simulation</td>
<td>3 hrs.</td>
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<tr>
<td>690</td>
<td>Statistical Methods for Engineers</td>
<td>3 hrs.</td>
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<tr>
<td>699</td>
<td>Master's Thesis</td>
<td>3 or 6 hrs.</td>
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<tr>
<td>729</td>
<td>Advanced Nonlinear Programming</td>
<td>3 hrs.</td>
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<tr>
<td>730</td>
<td>Multi-criteria Decision Analysis</td>
<td>3 hrs.</td>
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<td>733</td>
<td>Industrial Forecasting and Analysis II</td>
<td>3 hrs.</td>
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<tr>
<td>735</td>
<td>Discrete Optimization</td>
<td>3 hrs.</td>
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<tr>
<td>739</td>
<td>Selected Topics in Industrial and Systems Engineering</td>
<td>Credit to be arranged</td>
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<tr>
<td>747</td>
<td>Advanced Simulation Design and Analysis</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>790</td>
<td>Advanced Statistical Applications</td>
<td>3 hrs.</td>
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<tr>
<td>799</td>
<td>Doctoral Dissertation</td>
<td>3-6 hrs.</td>
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**Mechanical Engineering (ME)**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>198</td>
<td>Engineering Graphics</td>
<td>2 hrs.</td>
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<tr>
<td>271</td>
<td>Statics</td>
<td>3 hrs.</td>
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<tr>
<td>341</td>
<td>Thermodynamics I</td>
<td>3 hrs.</td>
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</tbody>
</table>


Forces and couples and resultants of force systems, freebody-diagrams, equilibrium, problems involving friction, centroids, and moments of inertia. Prerequisite or parallel: MA 251, PH 112.

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. Prerequisite: CH 121, PH 112. Lab fee: Level 5.

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 294 (or parallel).
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>342</td>
<td>Thermodynamics II</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Continuation of ME 341. Thermodynamic cycles, thermodynamic relations among properties, chemical reactions, and phase and chemical equilibrium. Prerequisite: ME 341.</td>
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<tr>
<td>352</td>
<td>Fluid Mechanics I</td>
<td>3 hrs.</td>
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<td></td>
<td>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 352. Lab fee: Level 5.</td>
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<tr>
<td>362</td>
<td>Dynamics</td>
<td>3 hrs.</td>
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<td></td>
<td>Kinematics and kinetics of particle and system of particles with applications to central force motion, impact, relative motion, vibrations, and variable mass system. Dynamics of rigid body in plane motion and vector solution of motion relative rotating axes. Prerequisite: ME 271.</td>
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<tr>
<td>364</td>
<td>Kinematics and Dynamics of Machines</td>
<td>4 hrs.</td>
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<td></td>
<td>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. Lab fee: Level 3. Prerequisite: ME 362.</td>
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<tr>
<td>370</td>
<td>Mechanics of Materials</td>
<td>4 hrs.</td>
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<td></td>
<td>Theory of stress and strain; combined stresses. Analysis of stresses and deformations in bodies loaded by axial, torsional, and bending loads; statically indeterminate members. Laboratory includes the determination of selected properties of several engineering materials including iron-carbon, alloys, aluminum alloys, brass, and plastics. Experimental verification of theories treated in ME 370. Use of strain measuring devices; test procedures, instrumentation, and interpretation of results. Preparation of reports. Lab fee: Level 5. Prerequisites: ME 271, 294.</td>
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<tr>
<td>378</td>
<td>Materials and Manufacturing Processes</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>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. (Same as ISE 378)</td>
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<tr>
<td>396</td>
<td>Numerical Methods and Computation</td>
<td>2 hrs.</td>
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<tr>
<td></td>
<td>Numerical techniques associated with complex problems. Evaluation of functions, finding roots of equations, solution of simultaneous algebraic and differential equations. Use of computers. Prerequisites: ECE 197, Prerequisite or parallel MA 244.</td>
<td></td>
</tr>
<tr>
<td>398</td>
<td>Selected Topics in Engineering</td>
<td>Credit to be arranged</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: permission of instructor.</td>
<td></td>
</tr>
<tr>
<td>442</td>
<td>Introduction to Heat and Mass Transfer</td>
<td>4 hrs.</td>
</tr>
<tr>
<td></td>
<td>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. One credit hour laboratory included. Lab fee: Level 4. Prerequisites: ME 341, 352, 396, MA 352.</td>
<td></td>
</tr>
<tr>
<td>444</td>
<td>Analysis and Design of HVAC Systems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>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, 442. (Same as ME 544)</td>
<td></td>
</tr>
<tr>
<td>446</td>
<td>Design of Thermal Systems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Principles of heat transfer, thermodynamics, and fluid mechanics applied to analysis and design of systems for storage and transport of energy. Modeling of thermal equipment, simulation of system performance, optimization of system design, and comprehensive design of thermal systems. Lab fee: Level 3. Prerequisite: ME 342, 442, 493.</td>
<td></td>
</tr>
</tbody>
</table>
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 352, 442, 454, ME 446 recommended. (Same as ME 547)

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 processes in environmental problems and in their control. Prerequisite: ME 442. (Same as ME 549)

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

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. Prerequisites: ME 352.

Advanced Fluid Mechanics 3 hrs.
Derivation of equations of motion, stress and rate of strain tensors; survey of application in one, two, or three dimensions; the complex potential and singularities, airfoils, and aerodynamic shapes; exact solutions of Navier-Stokes equations, approximations for flow at low and high Reynolds numbers; turbulence. Prerequisite: ME 454. (Same as ME 555)

Selected Topics in Engineering Credit to be arranged

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)

Engineering Design 3 hrs.
Continuation of ME 493 leading to design of an engineering system. Lab fee: Level 2. Prerequisites: ME 493, senior standing, and permission of instructor.

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, 370.

Mechanics of Materials II 3 hrs.

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 370. (Same as ME 574)

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 471. (Same as ME 578)
486 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)

488 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 engineering standing.

493 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. Prerequisite: ISE 321, ME 362, ECE 300. (Same as ECE 493)

496 Selected Topics in Mechanical Engineering 3 hrs.

540 Physical Properties of Fluids 3 hrs.

542 Internal Combustion Engines 3 hrs.

544 Analysis and Design of HVAC Systems 3 hrs.
(Same as ME 444)

545 Heat Distribution System Design 3 hrs.

546 Solar Energy Systems 3 hrs.

547 Energy Conversion and Power Generation I 3 hrs.

548 Energy Conversion and Power Generation II 3 hrs.

549 Introduction to Environmental Engineering 3 hrs.
(Same as ME 449)

550 Environmental Control 3 hrs.
(Same as ME 450)

555 Advanced Fluid Mechanics 3 hrs.
(Same as ME 455)

558 Dimensional Analysis and Similitude 3 hrs.

559 Selected Topics in Mechanical Engineering 3 hrs.
Credit to be arranged

561 Vibrations of Elastic Systems 3 hrs.
(Same as ME 461)

563 Intermediate Dynamics 3 hrs.

570 Mechanical Behavior of Engineering Materials 3 hrs.

574 Applied Mechanics of Solids 3 hrs.
(Same as ME 474)

578 Matrix Methods in Structural Mechanics 3 hrs.
(Same as ME 478)

586 Numerical Engineering Analysis 3 hrs.
(Same as ME 486)

601 Physical Metallurgy 3 hrs.

641 Advanced Thermodynamics 3 hrs.
(Same as CHE 641)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>645</td>
<td>Propulsion</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>649</td>
<td>Transport Phenomena</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>652</td>
<td>Introduction to Air Pollution Control</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>653</td>
<td>Gasdynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>654</td>
<td>High Speed Flow Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>655</td>
<td>Hydrodynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>656</td>
<td>Viscous Flow and Convective Heat Transfer I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>659</td>
<td>Selected Topics in Mechanical Engineering</td>
<td>Credit to be arranged</td>
</tr>
<tr>
<td>660</td>
<td>Theory of Vibrations</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>661</td>
<td>Advanced Dynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>663</td>
<td>Astrodynamics</td>
<td>3 hrs.</td>
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<tr>
<td>671</td>
<td>Continuum Mechanics</td>
<td>3 hrs.</td>
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<tr>
<td>672</td>
<td>Theory of Elasticity</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>674</td>
<td>Finite Element Analysis I</td>
<td>3 hrs.</td>
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<tr>
<td>677</td>
<td>Experimental Stress Analysis</td>
<td>3 hrs.</td>
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<tr>
<td>683</td>
<td>Graduate Seminar in Mechanical Engineering</td>
<td>No Credit</td>
</tr>
<tr>
<td>692</td>
<td>Graduate Engineering Analysis I</td>
<td>3 hrs.</td>
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<tr>
<td>693</td>
<td>Graduate Engineering Analysis II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>699</td>
<td>Master’s Thesis</td>
<td>3-6 hrs.</td>
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<tr>
<td>741</td>
<td>Statistical Thermodynamics</td>
<td>3 hrs.</td>
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<tr>
<td>743</td>
<td>Direct Conversion of Energy</td>
<td>3 hrs.</td>
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<tr>
<td>747</td>
<td>Advanced Heat Transfer</td>
<td>3 hrs.</td>
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<tr>
<td>752</td>
<td>Mechanics of Rarefied Gases</td>
<td>3 hrs.</td>
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<tr>
<td>753</td>
<td>Magneto-Gas Dynamics</td>
<td>3 hrs.</td>
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<tr>
<td>756</td>
<td>Viscous Flow and Convective Heat Transfer II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>757</td>
<td>Turbulence</td>
<td>3 hrs.</td>
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<tr>
<td>759</td>
<td>Selected Topics in Mechanical Engineering</td>
<td>Credit to be arranged</td>
</tr>
<tr>
<td>760</td>
<td>Analytical Methods in Nonlinear Dynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>762</td>
<td>Wave Motion of Continuous Elastic Bodies</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>768</td>
<td>Dynamics of Aerospace Vehicles</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>774</td>
<td>Finite Element Analysis II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>799</td>
<td>Doctoral Dissertation</td>
<td>3-6 hrs.</td>
</tr>
</tbody>
</table>

233
School of Nursing

Dean Joyce K. Shoemaker, B.S.N., M.S.N., Ed.D., Professor of Nursing

Professors Burge, Hincker; Associate Professors Anderson, Baur, Henze, Lloyd, Maines, Pearson, Perrin, Phillips, Warren, Williamson; Assistant Professors Benedict, Cash, Grissett, Hartig, Heaman, Holder, Oakley, Reumann; Adjunct Assistant Professor Jones; Instructors Bowdoin, Estes, Jolley, Skelton

The School of Nursing offers the undergraduate Bachelor of Science degree in Nursing and the Master of Science in Nursing in the graduate program. The professional components of both 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 establish the scientific base for future practice of nursing. The upper division concentrates on progressive experiences and professional nursing practice, as well as theory to support it. In addition, the student selects a cognate area of study or a minor. Graduates are prepared to accept employment in all beginning-level positions in nursing practice.

Beginning students are advised by the School of Nursing Advisement Office personnel. Continuing students are assigned an adviser from the nursing faculty and must meet with the adviser once each term for program approval before registration.

Students transferring to UAH from other institutions should seek advice from the School of Nursing at least six months before registration. The student transferring into the program in nursing 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 Nursing

Registered nurses may be admitted at an appropriate point in the undergraduate curriculum to meet requirements for the Bachelor of Science degree. A specific schedule of required courses must be pursued. Opportunities to challenge other courses in the curriculum may be discussed with student's adviser.

To be admitted to the upper division clinical core of the baccalaureate nursing curriculum, a registered nurse applicant must (1) hold a current license to practice as a registered nurse in Alabama (2) meet requirements listed below under Health Service and Responsibility to Agencies, and (3) present evidence of satisfactory work experience as a nurse for the period immediately before admission to the clinical program.

Health Service

The unique clinical experiences of students in the baccalaureate and graduate programs require a health surveillance program not applicable to other students in the university. The protection of the student's own health as well as that of the patient necessitates the following regimen before any experience in patient-care agencies:

1. Health examination by a physician and dentist within two months before beginning junior, senior, and graduate years. Results of the examination must be submitted on forms provided by the School of Nursing at least two weeks before registration. This information must be on file with the Director of the Undergraduate Program or the Director of the Graduate Program before registration.

2. Admission to patient-care agencies depends on satisfactory reports of mental and physical health. Any disability that could affect the safety of patients (i.e., impaired hearing, vision, mentation, communicable disease, etc.) is cause for termination.

3. Health insurance that covers cost of ambulatory or out-patient treatment. Hospitals and health agencies are not responsible to care for illness or injury occurring while the student is practicing there.

Undergraduate Admission, Progression, Graduation Requirements

1. Normally a student must complete all lower-division requirements outlined in the catalog under School of Nursing before being admitted to the upper-division component of the nursing major.

2. A student admitted to the upper-division major must have an overall 2.0 (C) average on all hours taken, including all course work taken at UAH and other colleges and universities.

3. No grade below C is accepted in any required natural or behavioral science course or in English composition courses.

4. No grade below C is accepted in required courses in the nursing major.

5. A student who receives a grade below C in a required clinical nursing course may repeat the course one time.

6. If a student receives two course grades below C at any time during the program in a core clinical nursing course, the student is not permitted to continue.

7. 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.

8. The faculty of the School of Nursing reserves the right to review a student's progress at any time. Because of the nature of professional nursing practice, standards related to interpersonal relationships, behavior, and affect, as
well as scholarship, must be assessed. Failure of a student to meet these standards is considered cause for termination.

9. Elective credits accepted toward the degree are limited for activity courses as follows: physical education -- 3; military science -- 3; music -- 2; art -- 2. No more than a total of 4 credits in any combination of these activity courses are accepted to meet graduation requirements.

10. Students must meet standards for health as stated in the catalog under the School Nursing.

11. Requests for exceptions to any requirements may be appealed to the Academic Affairs Committee of the School of Nursing.

Responsibility to Agencies
Students practicing in patient-care agencies must be acceptable to those agencies and are responsible for complying with policies and procedures required by the agency, 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 114, 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>(If placed at Level II or above, student may use 3 hours as an elective.)</td>
<td></td>
</tr>
<tr>
<td>Statistics (a statistics course offered in any department)</td>
<td>3</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>6</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 (ED 230)</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

<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>

<table>
<thead>
<tr>
<th>Upper Division: 65 semester hours</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical nursing core courses (NUR 361, 372, 373, 480, 481, 473)</td>
<td>47</td>
</tr>
<tr>
<td>Introduction to Pharmacology (NUR 321)</td>
<td>2</td>
</tr>
<tr>
<td>Nutrition in Nursing (NUR 322)</td>
<td>2</td>
</tr>
<tr>
<td>Introduction to Health Assessment (NUR 330)</td>
<td>3</td>
</tr>
<tr>
<td>Research Process in Nursing (NUR 423)</td>
<td>2</td>
</tr>
</tbody>
</table>

237
Electives:
General elective ................................................................. 3
Upper division electives to complete cognate or minor .................. 6

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 area of concentration. Each student is guided by his assigned faculty adviser to select a cognate area or a minor field consistent with his goals and abilities.

The cognate area requires 21 semester hours of course work in two or more disciplines designed to give the student breadth relating his major subject to other fields of knowledge. In the cognate, 9 semester hours of upper division courses are required, 6 of which must be taken at UAH. See requirements for minor elsewhere under Academic Information.

Graduate Program
The School of Nursing offers the Master of Science in Nursing degree which builds upon and augments the scientific and professional base provided in baccalaureate-level study. See Graduate Catalog for details.

Nursing (NUR)

233  Personal Identity and Human Sexuality  3 hrs.
The study of theories and issues related to the development of a personal identity and human sexuality throughout the lifespan. Emphasis is placed on attitude development and values clarification related to human sexuality. Elective.

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. Lab fee: Level 7.

321  Pharmacology in Nursing  2-3 hrs.
Major drug classifications and therapeutic uses. Legal and ethical implications. Prerequisite: NUR 234.

322  Nutrition in Nursing  2 hrs.
Knowledge and principles of nutrition applied to individual health needs. Prerequisite: NUR 234.

325  Human Sexuality  3 hrs.
Theory and issues related to human sexuality in health and illness. Emphasis on both theory and values clarification of human sexuality issues. Prerequisite: Sophomore standing.

330  Introduction to Health Assessment  3 hrs.
Basic concepts and techniques of interviewing, history-taking, and physical assessment emphasizing normal findings. Lab fee: Level 3. Prerequisite: NUR 361.

331  Nursing Care of the Person with a Long-Term Illness  3 hrs.
effects of long-term illness on the growth, development, and adjustment of person and his family. Focus on family-centered nursing intervention emphasizing best possible adjustment to alterations in family life-style and promotion of high-level wellness within the family. Elective. Prerequisite: NUR 234, 361.
332 Nursing Care of Persons Experiencing Surgical Interventions 3 hrs.
Effect of surgical intervention on growth and development of the person and subsequent adjustment of himself and his family. Focus on family-centered intervention before, during, and after surgery. Promoting highest level of rehabilitation possible for individual and his family. Elective. Prerequisite: NUR 361 and approval of instructor.

333 Nursing Care of Acutely Ill Child through Adolescence 3 hrs.
Adaptation of acutely ill children through adolescence using a family-centered approach. Elective. Prerequisite: NUR 361 and approval of instructor.

334 Death and Dying 2-3 hrs.
Influence of death and dying upon attitudes and thinking gleaned from historical, cultural, philosophical, and scientific perspectives. Intimate reactions and believes concerning death and identifying coping resources. Elective.

335 Family-Centered Maternal-Infant Care 3 hrs.
Family-centered nursing emphasizing expanding family. Physiological and psychological effects of pregnancy on the family and need for maintaining and promoting high-level wellness in the family. Preparation of home and family for care of high-risk infant. Prerequisite: NUR 361, 372, and approval of instructor. Elective.

337 Nursing as a Political Force 3 hrs.
An 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.

361 Bases of Nursing Practices 7 hrs.

372 Nursing Process in Care of the Adult 8 hrs.
Nursing theory and process used in caring for individuals experiencing assaults on mind-body integrity. Clinical experiences included. Lab fee: Level 7. Prerequisite: NUR 321, 322, 361.

373 Nursing Process in Care of the Developing Family 8 hrs.
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 7. Prerequisite: NUR 321, 322, 361.

384 Nursing Process in Nursing Practice 8 hrs.
A transition course for Registered Nurses designed to build upon previous background in nursing. The course of study encompasses the philosophy of baccalaureate education as it applied to the care of the child, adult, and family. Prerequisites: 1) Registered Nurse status; 2) Lower Division courses. 3) Acceptance of application; 4) NUR 330 Pre- or Co-requisite. Lab fee: Level 7.

390 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 only. Prerequisite: NUR 361 and approval of proposal by instructor and dean.

413 Applied Pathophysiology 3 hrs.
An exploration of human adaptation and alteration in system function as a basis for nursing decision making. Clinical simulations will be used to assist the student to select appropriate interventions. Elective. Prerequisite: Senior level or permission of instructor.

423 Research Process in Nursing 2 hrs.
Research process applied to problems in nursing as a base for evaluation of existing practice and research. Concurrent with NUR 473.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>433</td>
<td>Nursing Care of Patients with Cardiovascular Problems</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>In-depth study of patients with cardiovascular problems, including clinical application of nursing process in meeting needs related to cardiovascular conditions. Elective. Prerequisite: NUR 480, 481, and approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>435</td>
<td>Clinical Psychiatric Nursing</td>
<td>2-4 hrs.</td>
</tr>
<tr>
<td></td>
<td>Continuing study of patients with psychiatric/emotional problems. Supplement to and expansion of theory and experiences gained in NUR 481. Expansion of applications and theoretical base of psychiatric nursing. Elective. Prerequisites: NUR 480, 481, and approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>473</td>
<td>Nursing Leadership in Professional Practice</td>
<td>8 hrs.</td>
</tr>
<tr>
<td>480</td>
<td>Nursing Process in Community Health</td>
<td>8 hrs.</td>
</tr>
<tr>
<td></td>
<td>Nursing process used to promote health and foster adaptation in individuals, families, and communities. Clinical experiences in community agencies and settings. Lab fee: Level 7. Prerequisites: NUR 330 and senior standing.</td>
<td></td>
</tr>
<tr>
<td>481</td>
<td>Nursing Process in Acute Care Nursing</td>
<td>8 hrs.</td>
</tr>
<tr>
<td>500</td>
<td>Special Topics</td>
<td>2-4 hrs.</td>
</tr>
<tr>
<td></td>
<td>Advanced study of underlying sciences and personal experiences in application of skills in selected area of interest in nursing. Elective. Prerequisite: approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>Advanced Coronary Nursing Care</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>A course designed primarily for graduate nurses to provide in-depth knowledge of the care of the cardiovascular patient. Emphasis will be placed on normal and pathological physiology as well as the exploration of behavioral aberrations and coping mechanisms. Prerequisite: Registered Nurse or new graduate.</td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>Development of Nursing Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>602</td>
<td>Seminar in Research</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>603</td>
<td>Professional Paper</td>
<td>1-4 hrs.</td>
</tr>
<tr>
<td>606</td>
<td>Advanced Health Assessment</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>612</td>
<td>Pathophysiology</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>614</td>
<td>Pharmacology in Advanced Practice</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>616</td>
<td>Family Counseling</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>627</td>
<td>Family Nursing</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>628</td>
<td>Family Nursing in Community I</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>629</td>
<td>Family Nursing in Community II</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>630</td>
<td>Family Nursing in Community III</td>
<td>7 hrs.</td>
</tr>
<tr>
<td>631</td>
<td>Family Nursing in Acute Care I</td>
<td>4 hrs.</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>632</td>
<td>Family Nursing in Acute Care II</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>634</td>
<td>Curriculum Development in Nursing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>635</td>
<td>Teaching and Evaluation in Nursing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>636</td>
<td>Practicum in Teaching or Supervision</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>640</td>
<td>Concepts of Role Resocialization</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>641</td>
<td>Issues in Professional Practice</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>650</td>
<td>Independent Study</td>
<td>2-4 hrs.</td>
</tr>
<tr>
<td>699</td>
<td>Thesis</td>
<td>1-6 hrs.</td>
</tr>
</tbody>
</table>
School of Primary Medical Care

Dean George W. Corner, Jr., B.A., M.D., Professor of Obstetrics and Gynecology

Emergency Medicine
Clinical Assistant Professor Throckmorton (chief); Clinical Instructor Beck; Lecturer White

Family Medicine
Emeritus Professor Grant; Associate Professors Banahan, Jr., Frierson (Interim Chief) J. Hopkins; Adjunct Associate Professor Fleming; Assistant Professors Crump, Garber; Clinical Assistant Professor S. Hopkins; Clinical Instructor Holdsambeck

Internal Medicine
Professor Sparks (chief); Clinical Professor Clabaugh; Associate Professor Franco-Browder; Clinical Associate Professors Chandler, Schreeder, R. Williams; Clinical Assistant Professors Boyer, Hull, Morgan.

Medical Sociology
Professor McCalister

Microbiology
Associate Professor Moore

Obstetrics and Gynecology
Professor Corner; Associate Professor DiPlacido (chief); Clinical Instructor Harris

Pathology
Clinical Associate Professor Litkenhous (chief); Lecturer Keebler

Pediatrics
Professor Montgomery (chief); Clinical Professor L. McKenzie; Associate Professor Fleming; Clinical Associate Professors Lester, Overbach, Ploussard, Quirante, Stewart; Clinical Assistant Professors Knight, Powell
Psychiatry
Professor Froelich; Associate Professor Traynor (chief); Clinical Associate Professor Rinn; Assistant Professor Abbott; Clinical Assistant Professors Green, King, Lindsay

Radiology
Clinical Associate Professor T. McKenzie (chief)

Surgery
Clinical Associate Professors Berg, Kakani, Laughlin, Selah (chief), Smith, Walker

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 at any of the three campuses are awarded diplomas from the University of Alabama School of Medicine.

Address correspondence about admission to the tri-campus UASOM to: Director of Admissions, University of Alabama School of Medicine, University Station, Birmingham, Alabama 35294. Students or prospective students at UAH interested in premedical or predental baccalaureate programs are referred to the preprofessional adviser in the School of Science through the Office of the Dean of the School 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.

Prehealth Studies and Emergency Medical-Paramedic Training (MED)

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. (Same as HPE 191).

192 Emergency Medical Technician-Basic Lab 1 hr.
Laboratory course concurrent with MED/HPE 191. Application of techniques taught in MED/HPE 191 to real or simulated situations. Qualification for examination for Alabama EMT-Basic license upon successful completion of lecture and laboratory courses. Prerequisite: MED/HPE 191 or concurrent enrollment. (Same as HPE 192).

291 Emergency Medical Technician—Intermediate Training 3 hrs.
Knowledge, understanding and skills needed to interpret electrocardiography of normal and lethal cardiac dysrhythmias, proper advanced airway management, proper administration of IV fluids and other advanced emergency care procedures. Prerequisite: MED 191 and 192 and current Alabama EMT-Basic license.

292 Emergency Medical Technician—Intermediate Laboratory 4 hrs.
Application of techniques taught in MED 291 to real or simulated situations. Successful completion of lecture and laboratory courses qualifies student to apply for the Alabama EMT-Intermediate license. Lab fee: Level 7. Prerequisite: MED 291.

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 in drugs endorsed by the American Heart Association as essential or useful for cardiac arrest. 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.
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. Prerequisite: MED 391.

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.

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.

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. 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.

Student Medical 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 in the clinical program include these areas:

- Obstetrics and Gynecology
- Psychiatry
- Pediatrics
- Family Medicine
- Internal Medicine
- Surgery

The core clerkships are based primarily in Huntsville Hospital but have 2 distinctive elements:

1. As part of the family medicine clerkship, every junior student is assigned to
a family physician practicing in Huntsville who serves as the student's personal mentor, adviser, and preceptor. Each student is assigned patient families to be seen in the physician-advisers' office.

2. Every senior student spends four weeks in a clerkship with a primary-care physician practicing in a rural or semi-rural community in North Alabama.

**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 nonmedical aspects of health care and practice.

**Electives**

Clinical Elective in Cardiology  
Clinical Elective in Dermatology  
Clinical Elective in Gastroenterology  
Clinical Elective in Infectious Disease  
Clinical Elective in Medical Oncology  
Clinical Elective in Nephrology  
Clinical Elective in Neurology  
Clinical Elective in Pulmonary Medicine  
Senior Subinternship in Medicine  
Clinical Elective in Ambulatory Pediatrics  
Clinical Elective in Pediatric Allergy  
Clinical Elective in Private Pediatric Practice  
Senior Subinternship in Neonatal Intensive Care  
Senior Subinternship in Pediatrics  
Developmental Pediatrics  
Senior Elective in Obstetrics and Gynecology  
Clinical Elective in Anesthesiology  
Clinical Elective in Ear, Nose, and Throat  
Clinical Elective in Neurological Surgery  
Clinical Elective in Ophthalmology  
Clinical Elective in Orthopedics  
Clinical Elective in Plastic and Reconstructive Surgery  
Clinical Elective in Cardiovascular Surgery  
Senior Subinternship in General Surgery  
Clinical Elective in Urology  
Clinical Elective in Colon and Rectal Surgery  
Senior Elective in Emergency Medicine  
Research Elective in Health Behaviors  
Research Elective in Social Factors in Human Reproduction
Clinical Elective in Radiology and Nuclear Medicine

Clinical Elective in Psychiatry

Clinical Clerkship in Family Medicine in North Alabama

Senior Elective in Clinical Pathology

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 and create an atmosphere in which they can provide families with comprehensive health care on a continuing basis under supervision of experienced family physicians. In acknowledgment 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 Ambulatory Care Center across the street from the main building of Huntsville Hospital. The Ambulatory Care Center is a microcosm of a complete primary-health-care delivery system and is an equal partner with the hospital as a base for learning.

At the beginning of the program each resident is assigned to one of the family practice modules in the Ambulatory Care Center and practices there throughout the program. Each module includes a family-practice faculty member and residents at each level of the program. In the first year residents are released from other rotations one-half day a week to see family-practice patients. The patient load increases during the second year when the residents see their patients from two one-half days a week to almost full-time, depending on the rotation to which they are assigned.

The residents begin their training program with concentrated in-hospital medicine. The first year consists of three months each in medicine, pediatrics, obstetrics and gynecology, and surgery. The medicine rotation is an intensive in-hospital experience. The pediatric rotation consists of one month of outpatient pediatrics, one month of inpatient general pediatrics, and one month of high-risk nursery experience. Obstetrics and gynecology, while basically a hospital rotation, also includes ambulatory care experience in Ob/Gyn and Maternal Health clinics in the Ob/Gyn module of the Ambulatory Care Center. The surgery rotation is composed of two months of general surgery and one month of emergency room experience. The residents work closely with medical students on all of the core rotations. Residents also spend one-half day a week in the Family Practice Center seeing their own patients.
The second and third years of the residency program emphasize ambulatory care experience. Rotations include one month each of neurology, orthopedics, cardiology, consultation medicine, dermatology, and two months of pediatrics. There is also a two-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. Minor rotations are provided in ENT, Ophthalmology, Urology, Radiology and Psychiatry. Behavioral medicine is an integrated experience while on Family Practice.

Residents have seven months of electives during their second and third years. One month is allotted to a rural preceptorship. This month of rural preceptorship affords the resident direct exposure to a rural practice in Alabama and has been very valuable to residents in the past.

Further information on the UAH-Huntsville Hospital Family Practice Residency Program is available from: Director of the Family Practice Residency, Ambulatory Care Center, 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 Hospital 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 southcentral Tennessee. Huntsville Hospital and the Clinical Science and Ambulatory Care Centers of the UAH School of Primary Medical Care form a geographic and functional nucleus for health-care education and delivery.

The UAH Ambulatory Care Center 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 Ambulatory Care Center also has a clinical laboratory, a radiology unit, an ambulatory surgical unit, and a pharmacy. Patients can be referred to a clinical nutritionist or a social worker or both within the same building. The computerized business information system makes readily available accounts-receivable data for patient billings and management-systems reports.

Biomedical research is conducted in the UAH Clinical Science Center in specially designed and equipped laboratories. 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.
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 Huntsville Hospital, the Lister Hill Library in Birmingham, the A. W. Calhoun Memorial Library at Emory University in Atlanta, and the National Library of Medicine in Bethesda, Maryland. The MEDLINE terminal in the SPMC Health Sciences Library makes available to the faculty and other members of the Huntsville medical community on-line searches through the data base of the National Library of Medicine.

The UAH Library is a member of NABIN (North Alabama Biomedical Information Network), which facilitates the rapid exchange of biomedical information among libraries and other informational units in the top tier of counties in North Alabama. NABIN interrelates with similar consortia in other areas to provide access to biomedical information resources around the world.

All medical services that the SPMC provides in educational settings for its medical students and residents are part of services provided by UAH to the region and state. The School of Primary Medical Care is one of a growing number of medical programs integrated into the life of their communities, drawing on existing facilities and professional personnel, and, in return, expanding and diversifying health services available.
Realizing that the acquisition of scientific knowledge and expertise is not only a profession but also a vital support to other disciplines, the School 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 School of Science consists of five academic departments; Biological Sciences, Chemistry, Computer Science, Mathematics and Statistics, and Physics. Programs are administered by these five departments and the Office of the Dean. Specific departmental degree requirements along with course descriptions are listed in the sections that follow. The School of Science is committed to computerization of programs and facilities through Project ACCESS.

Undergraduate Degrees and Study
The School 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, 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 natural sciences and statistics.

Graduate Degrees and Study
The School 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 in mathematics. Doctoral programs are offered in computer science and physics. The Doctor of Philosophy degree in chemistry and mathematics is available through a cooperative program with the University of Alabama, Tuscaloosa. For graduate course offerings and programs, refer to the Graduate Catalog.
Biological Sciences Department

Professors Dimopoulos, Leonard, Wilson, Professor Emeritus Adams; Adjunct Professor Montgomery; Associate Professors Campbell, Eley, Modlin, Young (Chairman); Adjunct Associate Professor Moore; Assistant Professors Garstka, Lawton, Moriarity, Zahorchak; Adjunct Assistant Professor Hassin, Meehan, Maulsby.

Undergraduate Programs

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 areas of concentration (AOC) relating biological sciences to some of the humanities, social sciences, and economics.

The biological sciences program must include BYS 112, 113, and 114 or the equivalent. Only one of these may count toward the major; the other two are needed to satisfy a portion of the general education requirements (GER). A major in biological sciences includes the following core courses:

a. One course in anatomy and physiology chosen from the following: BYS 313/314, 317, 371, 372, 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. The seminar requirement can also be met at the Marine Environmental Sciences Consortium at Dauphin Island.

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. BYS 492 is required for students in curricula preparatory for graduate study. Additional hours elected to constitute the minimum of 26 semester hours above the 100 level is required for a major in biological sciences may be taken in accordance with the individual student’s goal.

Curricula are available for students who elect premedical technology, preprofessional, graduate preparatory, environmental science, or secondary education programs. Curricula I-XI are offered as models of appropriate programs to fulfill the university’s degree requirements and achieve diverse goals in the biological sciences with related areas of emphasis. 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 required for certain programs), CH 113 or 331, CH 223, one biochemistry course in the major or minor, and 9 semester hours of mathematics including at least one calculus course. Biological science majors should take at least one course in statistics, which may be required in certain programs. ST 281 can count toward mathematics GER for the B.S. degree, if Mathematics placement is Level III.

A minor in biological sciences consists of 21 semester hours that include BYS
112, 113 (or 114), and 319 with at least 6 hours numbered 300 or above. Additionally, CH 101, 105, and 113 are required ancillary courses for a biological science minor. A course in biochemistry (BYS or CH 301) supports the minor but is not required.

Curriculum I
B.A. degree appropriate for biological sciences major with an associated minor in social sciences.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
<td>30-36</td>
</tr>
<tr>
<td>Biological sciences core courses and biological sciences electives</td>
<td>30-32</td>
</tr>
<tr>
<td>Chemistry (to include 113 or 331)</td>
<td>8-11</td>
</tr>
<tr>
<td>Physics</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3-6</td>
</tr>
<tr>
<td>Humanities, social sciences, economics, or associated cluster</td>
<td>21</td>
</tr>
<tr>
<td>Electives</td>
<td>27-30</td>
</tr>
</tbody>
</table>

Curriculum II
B.A. or B.S. degree with a major in Biological Sciences. This plan meets requirements for an Alabama Class B High School Teachers Certificate.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
<td>30-36</td>
</tr>
<tr>
<td>Biological Sciences core courses and electives to include BYS 312)</td>
<td>30-36</td>
</tr>
<tr>
<td>Chemistry (to include CH 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 — PH 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>
</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.

Curriculum III
B.S. degree, preparatory for general graduate study.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
<td>30-36</td>
</tr>
<tr>
<td>Biological sciences core courses and biological sciences electives</td>
<td>30-32</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 335, 361, 362 (341 desirable)</td>
<td>22</td>
</tr>
</tbody>
</table>

254
Mathematics—(depending on placement) .................................................. 9
Physics—Ph 101, 102 (PH 111, 112 may be taken) .................................. 8
Electives ............................................................................................... 12-15

Curriculum IV
B.S. degree with chemistry minor, preparatory for graduate study.

<table>
<thead>
<tr>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>30-36</td>
</tr>
<tr>
<td>30-32</td>
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<tr>
<td>22</td>
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<tr>
<td>9</td>
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<tr>
<td>8</td>
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<tr>
<td>12-15</td>
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</tbody>
</table>

Curriculum V
B.S. degree with physics-chemistry cognate studies, preparatory for graduate study.

<table>
<thead>
<tr>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>30-36</td>
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<tr>
<td>30-32</td>
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<tr>
<td>18</td>
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<td>15</td>
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<tr>
<td>20</td>
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<tr>
<td>12</td>
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</tbody>
</table>

Curriculum VI
B.S. degree, premedical, predental, preveterinary. (See chemistry section for an alternate premedical curriculum.)

<table>
<thead>
<tr>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>30-36</td>
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<tr>
<td>30-32</td>
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<tr>
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<td>9</td>
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<td>8</td>
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<td>16</td>
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</tbody>
</table>

Curriculum VII
B.S. degree, microbiology emphasis, preparatory for: (a) the National Registry of Microbiologist Examination for Registered Microbiologists with the American Academy of Microbiology; (b) graduate study in microbiology.

<table>
<thead>
<tr>
<th>Semester Hours</th>
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<tbody>
<tr>
<td>30-36</td>
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<tr>
<td>9</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>22</td>
</tr>
</tbody>
</table>
Electives (to include statistics if not in GER) .........................................................12  
Biological sciences core courses and BYS 221, 421, 430, 435, 521, 525) ........33

Curriculum VIII

B.S. degree, premedical technology emphasis. This curriculum satisfies academic requirements for a B.S. in biological sciences and includes prerequisites for acceptance in clinical training in medical technology. The clinical phase, which is taken after the B.S. degree has been earned, consists of a twelve-month internship in an accredited medical technology clinical training program of the student's choice. Upon successful completion of the clinical component the candidate is eligible for certification as a medical technologist. The following curriculum comprises the preclinical component. Completion of this four-year program does not automatically ensure acceptance into a clinical training program.

Semester Hours
GER (humanities and social sciences) .................................................................30-36  
Physics—PH 101, 102 .........................................................................................8  
Mathematics (depending upon placement) ........................................................9  
Biological sciences—BYS 221, 313, 314, 319, 421, 430, 521, 525, seminar ..........33  
Chemistry—121, 123, 125, 126, 223, 331, 332, 335, 361, 362 .........................22  
Electives (CS 113 is recommended; statistics must be included if not in (GER) .................................................................12

Curriculum IX

B.S. degree, preparatory for graduate study in biological sciences-mathematics (biometrics).

Semester Hours
GER (humanities and social sciences) .................................................................30-36  
Biological sciences core courses and biological sciences electives ................30-32  
Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 335, 361, 362 ......................22  
Mathematics—MA 153, 154, 233, 244, 251, 385, 585 ...........................................21  
Physics—PH 101, 102, or 111, 112 ....................................................................8  
Electives (ST 281, 287 recommended) ..............................................................12

Curriculum X

B.S. degree, environmental biology emphasis, preparatory for graduate study in ecology or environmental science.

Semester Hours
GER (humanities and social sciences) .................................................................30-36  
Biological sciences core courses, biological sciences electives,  
and BY 221, 312, 371 or 378, and two from BYS 561, 562, 563,  
and 564 ..............................................................................................................30  
Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 335, 361, 362 ...................22  
Physics—PH 101, 102, or 111, 112 ....................................................................8  
Mathematics—(including ST 281 if Level III placement) ....................................9  
Environmental science—ES 202 ........................................................................4  
Computer science—CS 113, 208 ......................................................................6  
Electives (to include statistics if not mathematics Level III placement) .............12
Curriculum XI

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.

Semester Hours

GER (humanities and social sciences, EC or PSC recommended) .............................................36
Mathematics (including ST 281 if Level III placement) .................................................................9
Physics—PH 101, 102, or 111, 112 ........................................................................................................8
Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 335, 361, 362 ........................................22
Environmental sciences—ES 102, 303, or 304, 311, 321 ...............................................................13
Biological sciences—BYS 113, 114, 221, 312, 319, and MS 507,
BYS 531, or BYS 561 ......................................................................................................................23
BYS electives .................................................................................................................................12-14
One from 315, 317, 378 ......................................................................................................................4-5
One from 562, 563, 564 .....................................................................................................................4
One from 364, 368, 372 .....................................................................................................................4-5
Computer science—CS 113 ...............................................................................................................3
Free electives (to include statistics if not MA Level III placement) .................................................9-11

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 science major or minor, a minor in marine sciences, or a Master of Science degree in biological science. Biological science majors electing a marine science minor generally would not take MS courses in the minor that were principally biological oriented. Courses for which credit is not given for a biological science major or minor can be taken as electives. All programs of study that involve marine science courses must be approved by the MESC-UAH liaison officer.

Biological Science (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 3.

113 General Botany ..........................................................................................................................4 hrs.
Biological principles related to the Plant Kingdom; Cells, tissues and functional anatomy of plants. One lab a week. Lab fee: Level 3. Prerequisites: BYS 112.

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. Lab fee: Level 3. Prerequisites: BYS 112.
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. Two 2-hour labs a week. Lab fee: Level 4. Prerequisites:
BYS 114, CH 101.

221  General Microbiology  4 hrs.
Cultivation and observation of microorganisms and their relation to foods, water, and
industrial processes; environment and disease. Two 2-hour labs a week. Not recommended
for students in School of Nursing. No credit for students who have completed BYS 214.
Take no later than sophomore year. Lab fee: Level 4. Prerequisites: BYS 112, 114, CH 101
or 121 or equivalents.

238  Local Flora  2 hrs.
Laboratory course with basic taxonomical procedures and determination of local angio-
sperms, primarily dicots. Basics of classification techniques and process of speciation. Field
trips required. Lab fee: Level 2.

301  Elementary Biochemistry  3 hrs.
Biochemistry and energetics of living cells, metabolism, structure and function of carbohy-
drates, 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 123. (Same as CH 301).

312  Principles of Ecology  4 hrs.
Ecological principles controlling plant and animal populations. Development of ecosystems,
communities, and habitats. One four-hour lab a week. Lab fee: Level 3. Field trips
required. Prerequisites: BYS 112, 113, 114, 238, CH 121.

313  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 recommended for students preparing for professional
schools or graduate study in physiology or development. One lab a week. Lab fee: Level 4.
Prerequisites: BYS 112, 113, 114, 105 and 105 (CH 113 recommended).

314  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 recommended for students preparing
for professional schools or graduate study in physiology or development. One lab a
week. Lab fee: Level 4. Prerequisites: BYS 313, CH 101 and 105 (CH 113 recommended).

315  Ichthyology  4 hrs.
Classification, anatomy, physiology, and ecology of freshwater and marine fishes. Emphasis
on fishes of North Alabama. Laboratory and field trips required. Lab fee: Level 3.
Prerequisite: BYS 114.

317  Vertebrate Zoology  5 hrs.
Morphology of vertebrate animals. Relationship of organs and systems and their phylogenetic
significance. Two three-hour labs a week. Lab fee: Level 4. Prerequisite: BYS 114.

318  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. Prerequisites:
BYS major; BYS 114.

319  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. Prerequisites: BYS 112 and CH 101 or equivalent.
320 Genetics Laboratory 1 hr.
Practical applications of modern genetic techniques. One 3-hour lab a week. Lab fee: Level 3. Prerequisite or concomitant: BYS 319.

340 Introduction to Cellular and Developmental Biology 4 hrs.
Modern approach to embryology relating cell structure and function to mechanisms involved in development. One laboratory a week. Lab fee: Level 4. Prerequisites: BYS 112, CH 101, 105, 113, or 331. BYS 319 recommended. It is strongly recommended that biological science majors and preprofessional students take BYS 543, 544, and 545 instead of BYS 340.

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, Kreb's cycle, photosynthesis and lipids, amino acids and proteins, and nucleic acids. Prerequisites: BYS 112, 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. One 4-hour lab a week. Lab fee: Level 4. Prerequisite or parallel: CH 361. (Same as CH 362).

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.

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. Two 3-hour labs a week. Lab fee: Level 4. Prerequisite: BYS 113.

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. Two 3-hour labs a week. Lab fee: Level 3. Prerequisite: BYS 113.

378 Invertebrate Zoology 5 hrs.
Invertebrate phyla emphasizing anatomy, morphology, embryology, ecology, and phylogenetic relationships. Two 3-hour labs a week. Lab fee: Level 4. Prerequisite: BYS 114.

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. Two 3-hour labs a week. Lab fee: Level 4. Prerequisite: BYS 221, BYS or CH 361, and BYS 430 recommended.

430 Immunology 4 hrs.
Basic course in immunology. Immunoglobulins, antigens, immune responses, complement, immediate and cell-mediated hypersensitivities, and transplantation and tumor immunology. One 4-hour lab a week. Lab fee: Level 4. Prerequisite: BYS 221 and biochemistry strongly recommended.

435 Bacterial Physiology and Metabolism 4 hrs.
Aspects of bacterial physiology such as nutrition, growth, energy, and biosynthetic mechanisms of bacteria. One 4-hour lab a week. Lab fee: Level 4. Prerequisite: BYS 221. Biochemistry strongly recommended.
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<tr>
<th>Course Code</th>
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<th>Hours</th>
<th>Description</th>
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<tbody>
<tr>
<td>436</td>
<td>Physiological Psychology</td>
<td>3 hrs.</td>
<td>Functional analysis of neural and endocrine systems underlying behavior. Prerequisites: (either a or b): (a) 15 hrs. of PY or approval of instructor; (b) BYS 114 or 313, and 6 hrs. of PY or approval of instructor. (Same as PY 436).</td>
</tr>
<tr>
<td>490</td>
<td>Special Topics in Biological Sciences</td>
<td>1-4 hrs.</td>
<td>Literature search relative to topics of special interest under direct supervision of instructor.</td>
</tr>
<tr>
<td>492</td>
<td>Undergraduate Research</td>
<td>2-4 hrs.</td>
<td>Individual investigations into biological problems under direct supervision of instructor. For advanced-level biological science students with biological science grade of 3.5 or above. May be taken at the Marine Environmental Sciences Consortium, Dauphin Island, Alabama. Lab fee: Level 2 for 2 hours, Level 3 for 3 hours, and Level 4 for 4 hours. Prerequisite: approval of instructor.</td>
</tr>
<tr>
<td>496, 497, 498, 499 Seminar</td>
<td>1 hr. each</td>
<td>Student discussions and presentations of biological literature from current library monographs and journals. Prerequisite: junior standing. Pass/fail grading. Biological sciences major requirement, one seminar. No more than 3 seminar credits can count in biological sciences major. May be taken at the Marine Environmental Sciences Consortium.</td>
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**Advanced Undergraduate — Graduate Courses**

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<th>Course Code</th>
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<tr>
<td>521</td>
<td>Medical Mycology (UAH)</td>
<td>4 hrs.</td>
<td>Comprehensive study of fungi pathogenic to man; their properties, pathogenesis, and laboratory diagnosis. Two 2-hour labs a week. Lab fee: Level 4. Prerequisite: BYS 421; BYS 430 is recommended.</td>
</tr>
<tr>
<td>524</td>
<td>Mycology (UAH and A&amp;MU)</td>
<td>4 hrs.</td>
<td>Lines of phycomycetes using representative species; various series of actinomycetes; representative pathogenic (crop and vegetative pathogens) and nonpathogenic heterobasidiomycetidae organisms; order and families of homobasidiomycetidae. Ontogenetics, cellular, and structural study applied to all divisions, classes, series, orders and families. Lab fee: Level 4.</td>
</tr>
<tr>
<td>525</td>
<td>Medical Parasitology (UAH)</td>
<td>5 hrs.</td>
<td>Protozoa and helminths parasitic for man and their laboratory identification. Arthropods in relation to their roles as vectors. Two 2-hour labs a week. Lab fee: Level 3. Prerequisite: BYS 221 or equivalent.</td>
</tr>
<tr>
<td>531</td>
<td>Plant Physiology (UAH)</td>
<td>4 hrs.</td>
<td>A general introductory study of life processes of plants, including water relations, mineral utilization, metabolism, photosynthesis, digestion, respiration, assimilation, and growth as affected by growth hormones. One 3-hour lab a week. Lab fee: Level 3. Prerequisites: BYS 113, 371, or 372, CH 113 or 331.</td>
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</tbody>
</table>
532 Animal Physiology (UAH) 4 hrs.
Basic course in organismal function. Membrane physiology with respect to transport phenomena, muscle, nerve, synapse, and sensory receptor physiology. Physiology of respiration, heart, circulation, kidney, and gastrointestinal tract as individual systems with emphasis on regulation. One laboratory session a week illustrating physiological principles discussed in lecture. Lab fee: Level 4. Prerequisite: senior classification with a major or cluster in biological science; 16 hours completed in AOC and CH 113 or 331 or graduate standing.

543 Cellular and Developmental Biology (UAH) 3 hrs.
Cellular structure and function coupled with relevant aspects of developmental mechanisms. Lecture on mitosis, gametogenesis, nuclear-cytoplasmic interactions, role of genes in development, mechanisms of hormone action on cellular function and development and cell movements and affinities. Prerequisites: BYS 113, 114, 319, CH 101, 105, and 113 or CH 123, 126 and 331 (may be taken concomitantly).

544 Cellular and Developmental Biology (UAH) 3 hrs.
Continuation of BYS 543 and selected morphogenesis of germ-layer derivatives. Prerequisite: BYS 543.

545 Cellular and Developmental Biology Laboratory (UAH) 2 hrs.
Take course after BYS 543 and concurrently with BYS 544. Lab fee: Level 5.

547 Biochemistry I (UAH) 3 hrs.
Structural chemistry and function of biomolecules, mechanisms of biochemical reactions, enzyme kinetics, and energy transfer. Prerequisite: CH 333 or CH or BYS 361. (Same as CH 561).

548 Biochemistry II (UAH) 3 hrs.
Metabolism, biosynthesis of macromolecular precursors, storage, transmission, expression of genetic information, and molecular physiology. Prerequisite: CH 561 or BYS 547. (Same as CH 562).

561 Physiological Ecology (UAH) 4 hrs.
Physiological and behavioral responses of organisms to natural changes in their chemical and physical environment. One 3-hour lab a week. Lab fee: Level 3. Prerequisite: BYS 312 or approval or instructor. BYS 361 or 532 recommended.

562 Community Ecology (UAH) 4 hrs.
Detailed consideration of ecological principles and concepts, as well as biotic and abiotic factors relative to development of plant communities and ecosystems. One 4-hour lab a week. Lab fee: Level 3. Field trips required. Prerequisites: BYS 312 and taxonomy.

563 Population Ecology (UAH) 4 hrs.
Distribution, population dynamics and behavior of animal population in relation to environmental factors. One 4-hour lab a week. Lab fee: Level 3. Field trips required. Prerequisites: BYS 312 and organic chemistry.

564 Limnology (UAH) 4 hrs.
Fresh-water environments and organisms exemplified by lakes, ponds, and streams in North Alabama. Laboratory and required field trips. One 4-hour lab a week. Occasional Saturday field trips required instead of week's laboratory session. Lab fee: Level 4. Prerequisites: BYS 312, 315, 371 or 378, or approval of instructor.

571 Plant Anatomy (UAH and A&MU) 4 hrs.
Ontogeny, differentiation, and maturation of tissues and organs of angiosperms. Problems in growth and development of an angiosperm, using histological techniques. Two 3-hour labs a week. Lab fee: Level 4. Prerequisite: BYS 372 or approval of instructor.
578 Aquatic Arthropod Biology 4 hrs.
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. Lab fee: Level 4. Prerequisite: BYS 378.

621 Pathogenic Bacteriology (UAH) 4 hrs.
624 Immunology (UAH) 4 hrs.
633 Endocrinology (UAH) 3 hrs.
641 Advanced Cell Biology (UAH and A&MU) 4 hrs.
643 Microscopy (UAH) 4 hrs.
644 Topics in Cell and Developmental Biology 2 hrs.
646 Molecular Genetics (UAH and A&MU) 3 hrs.
647 Enzymology (UAH) 4 hrs.
648 Enzymology Laboratory (UAH) 2 hrs.
653 Taxonomy of the Immature Insect (UAH and A&MU) 4 hrs.
660 Ecosystem Dynamics (UAH) 4 hrs.
661 Advanced Population Ecology (UAH) 4 hrs.
690 Seminar (UAH and A&MU) 1 hr.
691 Special Topics (UAH and A&MU) 1-4 hrs.
692 Research (UAH and A&MU) 2-4 hrs.
699 Master's Thesis (UAH and A&MU) 1-4 hrs.

Advanced Undergraduate-Graduate Courses at Alabama A&M University

Courses offered jointly by Alabama A&M University and UAH but which are taught on the A&M campus are listed below for ready reference. See Graduate Catalog for details.

510 Radiation Biology (A&MU) 4 hrs.
Characteristics of radioisotopes, detection and counting techniques and instrumentation, tracer techniques, health and safety system. Prerequisite: consultation with instructor.

511 Biological Control (A&MU) 4 hrs.
Components of resistance, use of parasites, predators and microorganisms, foreign exploration, shipment, release and establishment of imported parasites and predators.

512 Histotechniques (A&MU) 3 hrs.
Microscopic study of the various tissues and organs of the animal systems.

522 Microbial Physiology (A&MU) 3 hrs.
Relationship between structure and biochemical functions in microorganisms. Lab Fee: Level 4. Prerequisite: microbiology, organic chemistry, and biochemistry.
523 Principles of Virology (A&MU) 4 hrs.
Principles of viral infectivity, multiplication, and chemical constitution; laboratory techniques for their isolation, cultivation, identification, and enumeration. Prerequisite: BYS 221.

526 Microbial Ecology (A&MU) 4 hrs.
Relationship of soil and aquatic microorganisms and their importance in ammonification, nitrification, and other biological processes. Prerequisite: BYS 221.

533 Medical Physiology I (A&MU) 4 hrs.
Nerve and muscle cell function, fluid and electrolyte environment of body tissues, blood, heart, circulatory, and nervous systems. Prerequisite: organic chemistry, preferably biochemistry.

534 Medical Physiology (A&MU) 4 hrs.
Continuation of Mammalian Physiology I with consideration of kidney function, respiratory, digestive, reproductive, and endocrine systems. Prerequisite: Medical Physiology I.

535 Endocrinology (A&MU) 4 hrs.
Current developments on anatomy, physiology, chemistry, and regulations of major endocrine glands. Laboratory sessions in biological and chemical assays of hormones. Prerequisite: ZOO 409.

540 Molecular Biology (A&MU) 4 hrs.
Structure, behavior, and function of larger biological molecules including biological oxidations, metabolism of carbohydrates, lipids, amino acids, and genetic aspects of metabolism. Prerequisite: CHE 301 Organic Chemistry.

546 Cytogenetics (A&MU) 4 hrs.
Analysis of composition, morphology, and behavior of genes, especially as they relate to function, development, and heredity. Prerequisite: BIO 406.

549 Analytical Biochemistry Laboratory (A&MU) 2 hrs.
Advanced laboratory course dealing with modern techniques of molecular biology and biochemistry.

551 Insect Physiology (A&MU) 4 hrs.
Metabolism and utilization of carbohydrates, lipids, and nitrogen compounds; energy production, neuromuscular mechanisms, hormones and morphogenesis; role of organs and organ systems in metabolism. Prerequisites: general entomology or equivalent, advanced biochemistry.

552 Insect-Pest Management (A&MU) 4 hrs.
Insect surveys, ecological basis for control, plant and animal resistance to insects, control by parasites, predators, microorganisms, management by genetics principles, chemical attractants, chemical repellents, sterilization, insecticides, and integrated systems of pest management. Prerequisite: general entomology or advanced applied entomology.

560 Environmental Biology (A&MU) 3 hrs.
Principles of interaction between living systems and their resources. Current problems in management of our natural resources including new approaches in management of pest populations.

570 Plant Pathology (A&MU) 4 hrs.
History, nonparasitic, and parasitic diseases incited by bacteria, fungi, plasmodiophorales, nematodes, and viruses. Disease control through exclusion, eradication, protection, and post resistance. Prerequisite: BIO 344.

572 Plant Taxonomy (A&MU) 4 hrs.
Principles of classifying, naming, and identifying vascular plants with emphasis on flowering plants. Ecologic factors influencing vegetational distribution.
Problems in Biological Sciences (A&MU, Plan III Only) 4 hrs.
Problems of elementary and secondary school teachers of science in all areas of biological sciences. Relations of biological organisms to their environment, stressing climatic and soil factors that influence their distribution and adaptations. Provision for individual investigation in biological science.

Applied and Industrial Microbiology (A&MU) 4 hrs.
Advanced Virology (A&MU) 4 hrs.
Medical Pharmacology (A&MU) 5 hrs.
Cardiovascular Physiology (A&MU) 3 hrs.
Advanced Cell Physiology (A&MU) 4 hrs.
Human Cytogenetics and Its Clinical Application (A&MU) 3 hrs.
Advanced Applied Entomology (A&MU) 4 hrs.
Advanced Systematic Botany (A&MU) 4 hrs.

Marine Sciences (MS)
Courses are offered only at the Marine Environmental Sciences Consortium Sea Lab at Dauphin Island, Alabama.
Courses that can be included in a biological sciences major or minor:

Coastal Zone Management 2 hrs.
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.

Marine Botany 4 hrs.

Marine Invertebrate Zoology I 4 hrs.
Local examples of principal groups of marine invertebrates. Reproduction, distribution, taxonomy, systematics, and ecology. Lecture, laboratory, and field work. Opportunity to acquire collection of local fauna. Prerequisite: general biology.

Marine Invertebrate Zoology II 4 hrs.
Study of select marine invertebrate phyla. Origins, relationships, comparative anatomy, embryology, and physiology. Prerequisite: invertebrate zoology.

Marine Vertebrate Zoology 4 hrs.

Marine Zoogeography 4 hrs.
Physical, chemical, and biological factors influencing distribution of marine organisms. Importance of continents, open oceans, and species competition on animal distribution. Zoogeographical patterns in Gulf of Mexico, western North Atlantic, and Caribbean regions. Prerequisite: 12 semester hours of biological sciences.
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<tbody>
<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>
<tr>
<td>509</td>
<td>Marine Ecology</td>
<td>4 hrs.</td>
<td>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 nonbiologists interested in marine environment. Individual species as they relate to ecological principles exemplifying taxonomic and ecologic backgrounds. Prerequisites: introductory ecology. Chemistry and physics recommended; marine invertebrate zoology or marine biology helpful.</td>
</tr>
<tr>
<td>510</td>
<td>Marsh Ecology</td>
<td>4 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>511</td>
<td>Benthic Community Structure</td>
<td>4 hrs.</td>
<td>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.</td>
</tr>
<tr>
<td>515</td>
<td>Coastal Ornithology</td>
<td>4 hrs.</td>
<td>Coastal and pelagic birds with emphasis on ecology, taxonomy, and distribution. Food habits, field identification, and population dynamics. Prerequisite: introductory zoology.</td>
</tr>
<tr>
<td>517</td>
<td>Marine Technical Methods III</td>
<td>2 hrs.</td>
<td>Advances 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.</td>
</tr>
<tr>
<td>590</td>
<td>Seminar</td>
<td>1 hr.</td>
<td>Current research, scientific progress, and problems in marine environment. Participation by students, faculty, and visiting scientists. Students are not required to enroll in seminar, but must attend to qualify for credit in any other course.</td>
</tr>
<tr>
<td>599</td>
<td>Research on Special Topics</td>
<td>1-4 hrs.</td>
<td>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.</td>
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</tbody>
</table>
610 Marine Systems Ecology 4 hrs.
The following courses cannot be taken for credit toward biological sciences major or minor but can be used for a marine science minor.

201 Ocean Science 4 hrs.
Marine environment; full perspective of major features of oceanic realm and relation of oceans to man. Lecture, laboratory, and field work.

202 Marine Biology 4 hrs.
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.

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 nonmajors.

204 Commercial Marine Fisheries of Alabama 2 hrs.
Biology, harvesting technology, and processing of commercial valuable fish and shellfish species of Alabama.

205 Introduction to the Coastal Marine Environment 2 hrs.
Biological, chemical, and climatological features peculiar to coastal areas of Alabama.

301 Marine Technical Methods I 2 hrs.
Research equipment, methods, and techniques in marine science. Training in operation and field maintenance of major pieces of sampling gear. Prerequisite: introductory biology, chemistry, or physics.

302 Marine Technical Methods II 2 hrs.
Equipment and techniques in laboratory analysis of water and other marine samples. Emphasis on water quality parameters. Prerequisite: introductory biology, chemistry, or physics.

303 Coastal Climatology 2 hrs.
Physical factors that result in climatic conditions in and near coastal region. Emphasis on northern Gulf of Mexico.

500 Environmental Science for High School Teachers 4 hrs.
Principles of ecology, techniques of laboratory and field studies, sources and control measures of pollution. Open to upper-level undergraduate and graduate students preparing to teach.

501 Introduction to Oceanography 4 hrs.
Physics, chemistry, biology, and geology of oceans. For graduate students and those preparing for graduate school or intending to enter marine sciences professionally. Prerequisites: college algebra, general physics, and general chemistry.

514 Estuarine Science 4 hrs.
Physical, chemical, and biological parameters of estuarine ecosystems. Field experience and lecture material. Mobile Bay in detail. Prerequisite: introductory zoology, chemistry, physics, or geology.

516 Scientific Data Management 2 hrs.
Key techniques and principles in evaluating and expressing experimental data. Mapping, profiling, contouring, applied statistics, and graphical and tabular representation of results. Not a substitute for basic statistics courses.
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<tr>
<td>520</td>
<td>Marine Geology</td>
<td>4 hrs.</td>
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<tr>
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<td>Sampling techniques, laboratory analysis of sediments, application of research process to problems in identifying sedimentary environments, topography, sediments, and history of world oceans. Beneficial for understanding sedimentary substrate on or in which a large percentage of marine organisms live. Lecture, laboratory, and field work. Prerequisite: physical geology.</td>
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</tr>
<tr>
<td>521</td>
<td>Recent Marine Sedimentation</td>
<td>4 hrs.</td>
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<tr>
<td></td>
<td>Investigations in properties of marine sediments, coastal sedimentary environments, continental margin sediments, reef and associated sediments, deep-sea sediments and marine geophysics. Erosional and depositional effects of waves and currents. Prerequisite: marine geology or oceanography.</td>
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</tr>
<tr>
<td>522</td>
<td>Marine Paleocology</td>
<td>4 hrs.</td>
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<td>Principal marine fossil groups in Gulf Coastal Plain sediments, their paleoecology, and paleogeography. Recent and ancient marine communities and individuals in them. Prerequisite: marine geology or advanced geology.</td>
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</tr>
<tr>
<td>601</td>
<td>Oceanology of Gulf of Mexico</td>
<td>4 hrs.</td>
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</table>
Chemistry Department
Professors Arendale, Baird (chairman), McManus, Riley; Associate Professors Meehan, Coble, Emerson; Loo; Associate Research Professor Gregory; Adjunct Associate Professor Young; Assistant Professor; Setzer

Undergraduate Programs
The University of Alabama in Huntsville is on the American Chemical Society's list of approved schools 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 Teachers Certificate; (3) graduate study in chemistry; (4) general education in chemistry; (5) graduate study combining chemistry and physics; and (6) graduate study combining chemistry and biology.

Requirements for the Chemistry Major
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 the calculus by successful completion of MA 153, 154, 233, and 251 (or equivalent).
3. Successful completion of PH 111, 112, plus 2 to 3 additional hours of physics, usually PH 113 or PH 201, chosen in consultation with a chemistry faculty advisor.
4. Completion of the university’s General Education Requirements (GER). For a chemistry major, the GER requirement (a) consists of the following:

   - English (6 hours of composition and 6 hours of literature) 12 hours
   - History 6 hours
   - 1 Social Science 6 hours
   - 1 Foreign Language (usually German or Russian) 12 hours
   - Mathematics (b) 9 hours
   - Laboratory Science (c) 8 hours

Notes: (a) The section of the catalog dealing with the GER requirements of the university should also be consulted for details.
(b) If the student’s minor is mathematics, this requirement is waived. Otherwise, MA 153, 154 and 223 can be used to satisfy the mathematics requirement of the GER.
(c) If the student’s minor is physics or biological sciences this requirement is waived.

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 at least 12 hours of electives, which cannot be in chemistry or in the subject of the minor. If mathematics is not the minor, then MA 251 can be used as an elective.

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 his program, but all course patterns that differ from those listed below require faculty approval.

**Curriculum I  Premedical Program**

The premedical program conforms to requirements of most medical schools and contains sufficient chemistry to meet 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. (An alternative premedical curriculum is included in Biological Sciences section.)

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-36</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Biological Sciences—BYS 113, 114, and one elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Science electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
</tr>
</tbody>
</table>

**Curriculum II**

B.S. degree with major in chemistry. This plan meets requirements for an Alabama Class B High School Teachers Certificate.

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-36</td>
</tr>
</tbody>
</table>

**Chemistry**—CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 341, 342, 343, 345, 346, 401, 493, plus 3 hours at the 300 level or above

<table>
<thead>
<tr>
<th>Mathematics—MA 244</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Biological Sciences (minimum requirements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
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</table>

<table>
<thead>
<tr>
<th>Second Teaching Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Professional Education Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>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
ACS Approved Program. This curriculum is approved by the American Chemical Society’s Committee on Professional Training. It is 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.

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 401, 421, 493 plus 3 hours at the 500 level or above</td>
</tr>
<tr>
<td>Mathematics—MA 244 and 352</td>
</tr>
</tbody>
</table>

Curriculum IV
General education curriculum with a chemistry major. Deficiencies may exist with respect to graduate school entrance requirements.

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 401, and 493 plus 3 hours at the 300 level or above.</td>
</tr>
<tr>
<td>Mathematics—MA 244</td>
</tr>
<tr>
<td>Science electives</td>
</tr>
</tbody>
</table>

Curriculum V
Chemistry-physics program appropriate for pregraduate education.

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 401, 421 and 493</td>
</tr>
<tr>
<td>Physics—PH 241, 331, 351, one laboratory from 310-312, and one elective</td>
</tr>
<tr>
<td>Mathematics—MA 244, 352, and one elective</td>
</tr>
</tbody>
</table>

Curriculum VI
Typical chemistry-biological sciences program appropriate for pregraduate education in biochemistry or for students interested in clinical chemistry.

In addition to providing sound pregraduate school training for biochemists, this program exceeds the minimum requirements of the American Association of Clinical Chemistry. Thus a person who completes 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>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336, 337, 341, 342, 343, 345, 346, 361, 362, 421 and 493</td>
</tr>
</tbody>
</table>

270
Biological sciences—BYS 113, 114, 221, and two electives ...................21
Mathematics—MA 244 .................................................................3

Notes: (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.
(b) 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.
(c) 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.
(d) 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 PH 113 or PH 201 before the fall term of their junior year.

Chemistry Minors

Typical course sequences for students wishing to minor in chemistry include the following. Each requires 6 or more hours of chemistry numbered 300 or above.
1. CH 121, 125, 123, 126, 223, 331, 332, 335, 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.

Graduate Program

For graduate courses and programs, refer to the UAH graduate catalog.

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 in 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 laboratory science requirement. No placement examination is required for enrollment in CH 101. Student may opt to take CH 101 even if satisfactory score on placement examination for enrollment in CH 121. Prerequisite: MA 104 or 105 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 chairman. CH 105 may not be counted in chemistry major or minor. Chemistry majors or minors receive only elective credit. Parallel: CH 101. Lab fee: Level 3.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>113</td>
<td>Elementary Organic Chemistry</td>
<td>4 hrs.</td>
<td>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. Lab fee: Level 3. Prerequisite: CH 101, 105; equivalent or placement examination.</td>
</tr>
<tr>
<td>121</td>
<td>General Chemistry</td>
<td>3 hrs.</td>
<td>For science and engineering majors. Principles concerned with gases, liquids, solids, and solutions. Nature of the chemical bond, kinetics, chemical equilibrium, thermochemistry, chemical properties of elements, their periodic groups, and their compounds. Introduction to nuclear chemistry. Prerequisite: CH 101 or placement test and MA 104 or MA 105 or placement Level II mathematics; parallel: CH 125.</td>
</tr>
<tr>
<td>123</td>
<td>General Chemistry</td>
<td>3 hrs.</td>
<td>Continuation of 121 with in-depth study of topics listed. Prerequisite: CH 121. Parallel: CH 126.</td>
</tr>
<tr>
<td>125</td>
<td>General Chemistry Laboratory</td>
<td>1 hr.</td>
<td>Laboratory work complements the lecture material for CH 121. Parallel: CH 121. Lab fee: Level 3.</td>
</tr>
<tr>
<td>126</td>
<td>Qualitative Inorganic Analysis Laboratory</td>
<td>1 hr.</td>
<td>Chemical equilibrium to systematic separation and qualitative detection of elements. Application of chemical and physical properties of numerous metal and complex ions and compounds. Parallel: CH 123. Lab fee: Level 3.</td>
</tr>
<tr>
<td>223</td>
<td>Quantitative Analysis</td>
<td>4 hrs.</td>
<td>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 4. Prerequisite: CH 126.</td>
</tr>
<tr>
<td>301</td>
<td>Elementary Biochemistry</td>
<td>3 hrs.</td>
<td>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 123. No credit given to chemistry majors or minors. Credit in CH 361 precludes credit in CH 301. (Same as BYS 301).</td>
</tr>
<tr>
<td>331</td>
<td>Organic Chemistry</td>
<td>3 hrs.</td>
<td>Chemistry of organic compounds. Synthetic methods, theory, and reaction mechanisms. Prerequisite: CH 123, 126; CH 223 recommended.</td>
</tr>
<tr>
<td>332</td>
<td>Organic Chemistry</td>
<td>2 hrs.</td>
<td>Continuation of CH 331. Prerequisite: CH 331.</td>
</tr>
<tr>
<td>333</td>
<td>Organic Chemistry</td>
<td>2 hrs.</td>
<td>Continuation of CH 332. Prerequisite: CH 332.</td>
</tr>
<tr>
<td>335</td>
<td>Organic Chemistry Laboratory I</td>
<td>1 hr.</td>
<td>Techniques of organic chemistry including synthesis, separation, and identification of organic compounds with use of chemical and spectroscopic methods. Lab fee: Level 4. Prerequisite or parallel: CH 331.</td>
</tr>
<tr>
<td>336</td>
<td>Organic Chemistry Laboratory II</td>
<td>1 hr.</td>
<td>Continuation of CH 335. Lab fee: Level 4. Prerequisite: CH 335. Prerequisite or parallel: CH 332.</td>
</tr>
</tbody>
</table>

272
Organic Chemistry Laboratory III  2 hrs.
Advanced organic chemistry laboratory treating reactions and techniques not covered in CH 335 and 336. Pursuit of special open-ended problem by each student. Lab fee: Level 4. Prerequisite: CH 336 and approval of instructor.

Chemical Thermodynamics  3 hrs.
Theory of classical thermodynamics and its application to chemistry of solids, liquids, gases, and solutions. Prerequisite: CH 223, PH 111. Prerequisite or parallel: MA 233, PH 112.

Chemical Dynamics  2 hrs.
Discuss kinetic theory of gases, theory and formulation of rate equations, mechanisms of chemical reactions, and applications. Prerequisite: CH 343.

Introduction to Quantum Chemistry  2 hrs.
Quantum mechanical treatment of chemical bond. Structure, symmetry, spectroscopy, and statistical thermodynamics. Prerequisite: CH 341, MA 244, or permission of the instructor.

Experimental Physical Chemistry I  1 hr.
Laboratory investigations into thermodynamics. Lab fee: Level 4. Prerequisite: CH 223 and 341.

Experimental Physical Chemistry II  1 hr.
Laboratory investigations into kinetics and spectroscopy. Lab fee: Level 4. Prerequisite: CH 345. Parallel: CH 342.

General Biochemistry  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 mechanisms. 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  1 hr.
Practical experience in isolation, qualitative identification, and quantitative estimation of biomolecules. One 4-hour lab a week. Lab fee: Level 4. Prerequisite or parallel: CH 361. (Same as BYS 362).

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.

Instrumental analysis  4 hrs.
Introduction to modern analytical instrumentation including IR, UV and atomic absorption spectrophotometers, nuclear magnetic spectrometer, electroanalytical equipment, and gas and liquid chromatographs. Lecture and laboratory. Lab fee: Level 4. Prerequisite: CH 346.

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.

Introduction to Chemical Research  1-3 hrs.
Personalized programs to round out undergraduate curriculum of students with various goals. Prerequisite or parallel: CH 345 and senior standing. Approval of supervising faculty member and chemistry chairman required. Registration utilized last digit of course number to designate semester-hour credit. Student normally may elect only up to 6 hours. Lab fee: Level 3 for CH 492, level 4 for CH 493. No fee for CH 491.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>521</td>
<td>Chemical Instrumentation</td>
<td>4 hrs.</td>
<td>Use of basic instrumentation in electrochemical, chromatographic, and spectrophotometric analysis. Laboratory work emphasis in general utility of operational amplifiers in making chemical measurements and introduction to digital logic. Lab fee: Level 4. Prerequisite: CH 346.</td>
<td></td>
</tr>
<tr>
<td>526</td>
<td>Environmental Chemistry</td>
<td>3 hrs.</td>
<td>Principles of quantitative analyses related to minor components of a sample. Applications selected from principal analyses necessary to maintain environmental quality of air, water, and soil. Selection of conditions for collecting reliable samples, concentration of components with techniques for increasing concentration of selected component, relationships between physical and chemical changes in sample and signal output of predominant transducers, and translation of chemical analysis into meaningful specifications. Lecture only. Prerequisite: CH 521 or 123; EG 311, 342.</td>
<td></td>
</tr>
<tr>
<td>531</td>
<td>Physical Organic Chemistry</td>
<td>3 hrs.</td>
<td>Introduction to theoretical organic chemistry. Bonding, methods for determining reaction mechanisms, reactive intermediates, and stereochemistry. Prerequisite: CH 333, 343, or approval of instructor.</td>
<td></td>
</tr>
<tr>
<td>540</td>
<td>High Polymer Chemistry</td>
<td>3 hrs.</td>
<td>Theory of polymer formation and structural dependence of polymer properties. Prerequisites: CH 337, 342.</td>
<td></td>
</tr>
<tr>
<td>549</td>
<td>Spectroscopy and Molecular Structure</td>
<td>3 hrs.</td>
<td>Intermediate level treatment of principles of spectroscopy and their application to determination of molecular structure. Prerequisite: CH 343.</td>
<td></td>
</tr>
<tr>
<td>553</td>
<td>Introductory Quantum Mechanics I</td>
<td>3 hrs.</td>
<td>Prerequisites: CH 343, PH 351, MA 244, 251, 352. (Same as PH 551).</td>
<td></td>
</tr>
<tr>
<td>554</td>
<td>Introductory Quantum Mechanics II</td>
<td>3 hrs.</td>
<td>Prerequisite: CH 553. (Same as PH 552).</td>
<td></td>
</tr>
<tr>
<td>560</td>
<td>X-Ray Structure Determination</td>
<td>3 hrs.</td>
<td>The course will examine both theoretical and practical aspects of molecular structure determination by x-ray diffraction methods. Topics include diffraction of x-rays, symmetry operations and space groups, methods of data collection, theory of structure factors and Fourier synthesis, least square methods of structure refinement. Extensive laboratory and computer work included. Lab fee: Level 4. Prerequisites: senior standing in chemistry or physics and approval of the instructor.</td>
<td></td>
</tr>
<tr>
<td>561</td>
<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 361. (Same as BYS 547).</td>
<td></td>
</tr>
<tr>
<td>562</td>
<td>Biochemistry II</td>
<td>3 hrs.</td>
<td>Metabolism, biosynthesis of macromolecular precursors, storage, transmission, and expression of genetic information, and molecular physiology. Prerequisite: CH 561. (Same as BYS 548).</td>
<td></td>
</tr>
<tr>
<td>565</td>
<td>Molecular Biochemistry Laboratory</td>
<td>2 hrs.</td>
<td>Practical experience in isolation and characterization of biomolecules. Lab fee: Level 4. Prerequisite: CH 562.</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>Advanced Inorganic Chemistry</td>
<td>3 hrs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>Structural Methods in Inorganic Chemistry</td>
<td>3 hrs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>Chemistry of Coordination of Compounds</td>
<td>3 hrs.</td>
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<td></td>
</tr>
</tbody>
</table>

274
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>603</td>
<td>Chemistry of Nonmetal Compounds</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>621</td>
<td>Methods of Chemical Analysis</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>631</td>
<td>Advanced Organic Chemistry I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>632</td>
<td>Advanced Organic Chemistry II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>633</td>
<td>Synthetic Organic Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>640</td>
<td>Advanced Chemical Thermodynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>641</td>
<td>Statistical Thermodynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>642</td>
<td>Advanced Chemical Dynamics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>643</td>
<td>Quantum Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>661</td>
<td>Biological Macromolecules</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>699</td>
<td>Master's Thesis</td>
<td>3 to 6 hrs.</td>
</tr>
<tr>
<td>705</td>
<td>Selected Topics in Inorganic Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>721</td>
<td>Selected Topics in Analytical Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>735</td>
<td>Selected Topics in Organic Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>745</td>
<td>Selected Topics in Physical Chemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>765</td>
<td>Selected Topics in Biochemistry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>780</td>
<td>Chemistry Seminar</td>
<td>1 hr.</td>
</tr>
<tr>
<td>799</td>
<td>Doctoral Dissertation</td>
<td>3, 6 or 9 hrs.</td>
</tr>
</tbody>
</table>

**Natural Science Program**

The natural science sequence (12 semester hours) is an integrated science program specifically for liberal arts (nonscience) majors. Contemporary aspects of science are a framework for introducing basic scientific concepts in a manner more appropriate for nonscience students. Fundamental ideas of chemistry, physics, and biology are treated to minimize distinction among the three disciplines. Study is directed toward conveying the impact of science on the individual’s life and teaching him to apply general, but sound, scientific logic to arrive at reasonable conclusions about scientific and technological questions. Stressed throughout the three terms are: (1) interaction of science with social, economic, and political forces, (2) strengths and limitations of science and technology, and (3) understanding of science as a human endeavor. The laboratory, which is necessary for any sound basic science program encourages students to be aware of modern-day problems and illustrates the need for careful experimental investigation of technical problems in the spirit of the scientific method.

The natural science sequence may be used to fulfill the university’s general education requirements. It also satisfies the physical and biological science requirement for teacher certification. Maximum benefit is obtained when three terms are taken sequentially because of the integrated nature of the program. Courses, however, may be taken out of sequence and an individual course may be taken as an elective. The program is open to undergraduates at all levels.
Natural Science (NS)

111 Ecological Awareness (with laboratory) 4 hrs.
Scientific nomenclature, ecosystems, cycles, environmental problems, population and control, resource depletion, food production, nutrition and additives, social and political issues, and economics as related to ecological crisis. Lab fee: Level 3. Prerequisite: Level I placement in mathematics (one year of high school algebra).

112 Physical Science and Society (with laboratory) 4 hrs.
Atomic structure, simple nuclear reactions, atomic energy and its uses, fission, fusion, energy crisis, relativity, introductory astronomy and cosmology, geographic evolution, and evolution of man. Lab fee: Level 3. Prerequisite: Level I placement in mathematics.

113 Human Awareness (with laboratory) 4 hrs.
Basic concepts and their relationship to society in genetics and genetic engineering, aging, human sexuality, contraception, venereal disease and drugs. Lab fee: Level 3. Prerequisite: Level I placement in mathematics.
Computer Science Department

Professors Johannes, Shiva (chairman); Associate Professors Amin, Hooper, Richards; Adjunct Associate Professors Hay, Parker; Assistant professors Graves; Bosworth, Ranganath; Instructors Cooper, Prince,

Programs
The computer science faculty offers courses leading to B.S., M.S. and Ph.D. degrees with a major in computer science. Courses are also available for a minor in computer science for students majoring in other areas. Refer to UAH graduate catalog for M.S. and Ph.D. Program descriptions.

Curriculum
B.S. degree with a major in Computer Science

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>GER (humanities, social science, foreign languages)</th>
</tr>
</thead>
</table>
|                | ....................................................................| 30-36

Basic Science

1. General Physics — Ph 111, 112 ......................................................... 8
2. Chemistry (CH 121, 123, 124, 126) or Biological Sciences (BYS 113, 114) ......................................................... 8


Computer Science Electives—(Must be preapproved by the student’s computer science adviser) ................................. 6

Mathematics Minor — (MA 153, 154, 233, 244, 251, 352, 385, 415, 440) ......................................................... 27

Electives (to bring total number of semester hours to 128) ................. 13-19

Minimum of 12 hours of electives outside of computer science and mathematics.

A suggested schedule of courses for full-time students majoring in computer science is shown below.

Freshman Year (Semester hours credit in parenthesis)

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 101/103</td>
<td>EH 102/104</td>
<td>EH 205</td>
</tr>
<tr>
<td>MA 153</td>
<td>MA 154</td>
<td>MA 233</td>
</tr>
<tr>
<td>HY 101</td>
<td>HY 102</td>
<td>CS 214</td>
</tr>
<tr>
<td>MA 233</td>
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<td></td>
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<tr>
<td>HY 101</td>
<td>CS 108</td>
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<td>9</td>
<td>12</td>
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<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

Total hours 30

Sophomore Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 206</td>
<td>*SS1</td>
<td>SS 2</td>
</tr>
<tr>
<td>MA 251</td>
<td>MA 244</td>
<td>MA 352</td>
</tr>
<tr>
<td>PH 111</td>
<td>PH 112</td>
<td>CS 314</td>
</tr>
<tr>
<td>CS 208</td>
<td>CS 308</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

Total hours 35
Junior Year

Fall | Winter | Spring
---|---|---
**FLL 1** (3) | **FLL 2** (3) | **FLL 3** (3)
MA 385 (3) | MA 415 (3) | MA 442 (3)
CH 121, 125 or BY 113 (4) | CH 123, 126 or BY 114 (4) | CS 309 (3)
CS 317 (3) | CS 424 (3) | 13
---|---|---
13 | 13 | 9
Total hours | 35

Senior Year

Fall | Winter | Spring
---|---|---
FLL 4 (3) | Selectives (6) | Electives (4)
Electives (3) | CS 415 (3) | CS Elective (6)
CS 490 (3) | 9 | 10
Total hours | 28
Degree Total hours | 128

*Social Science  
**Foreign Language and Literature

Minor

A minimum of 21 hours of course work is required for a minor in computer science. The request for minor should be initiated by the department in which the student is majoring. Typical course sequences for a minor are listed below:

- With mathematics and science majors: CS 108, 208, 308, 309, 314, 317 and one of the following: CS 415 or 424.

Double Major/Minor

Computer Science majors can obtain a second major in mathematics by taking 4 additional mathematics courses: ST 281, MA 502, and two of the following: MA 425, 542, 551.

A second minor can be obtained by taking 21 hours in a discipline outside mathematics and computer science. The 12 free elective hours can be utilized for the second minor.

Computer Science (CS)

100 Introduction to Computers and Programming 3 hrs.

101 Microcomputer Applications 3 hrs.
Provides students with a working knowledge of microcomputers. The course covers background orientation material and focuses on the business applications of microcomputers.
Computer programs that perform user tasks, such as word processing, accounting packages, electronic spreadsheets, database management are introduced; Introduction to networking, and basic programming. Lab fee: Level 3. No credit for Computer Science majors. Same as MIS 101.

108  Introduction to Computer Science I  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 languages, with extensive experience in programming solutions to both numerical and non-numerical problems. Lab fee: Level 3. Prerequisites: MA 121 (or level III placement) and CS 100 (or equivalent computer experience).

113  FORTRAN Programming  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 3. Prerequisite: MA 121 (or Level III placement).

201  Introduction to Computers and Information Systems  3 hrs.
Evolution of digital computers. Overall structure of computer problem solving and method of constructing computer solutions. Overview of hardware/software systems. Data and information processing in organizations and other computer uses in management. Management of the computer as a resource. Impact of computers on the individual and society, including security, privacy, and control. Programming in the BASIC language and the use of computer terminals. Applications and examples will generally be from administrative areas. Lab fee: Level 3. Prerequisite: MA 121 or MA 143 (or Level III placement). Same as MIS 201; no credit for CS majors; no credit for students who have had CS 100.

208  Introduction to Computer Science II  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 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 3. Prerequisites: CS 108 and MA 153.

211  Introduction to Computers in Business  3 hrs.
Information processing and computer fundamentals; computer systems, programming planning, and introductory COBOL programming. Table handling and hierarchical data structure. Lab fee: Level 3. Prerequisite: CS 108 or CS 113 or CS 201. (Same as MIS 211).

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 3. Prerequisite: CS 108 and MA 154.

308  Computer Organization and Assembly Language Programming  3 hrs.

309  Switching Theory  3 hrs.
Techniques for analysis and design of combinational and sequential switching networks; Boolean algebra, elements of coding theory. Minimum complexity combinational networks, minimum complexity sequential, and asynchronous sequential networks. Prerequisites: junior standing and CS 208. Lab fee: Level 3.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>310</td>
<td>Introduction to Business Data Processing</td>
<td>3 hrs.</td>
<td>Overview of COBOL, advanced COBOL features, control language and file handling (sequential random and indexed sequential), management of computers, documentation, and maintenance. Design and implementation of computer based information systems. Lab fee: Level 3. Prerequisite: CS 211, not open to students who have had CS 311. Same as MIS 310.</td>
<td></td>
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</tr>
<tr>
<td>311</td>
<td>Computer Application in Economics and Business I</td>
<td>3 hrs.</td>
<td>Business systems and data-processing procedures and impact of data-processing methods on economic structure of business. User communications, file design, report control, documentation. Data bases, information collection, planning and control, and systems design concepts. COBOL. Lab fee: Level 3. Prerequisite: CS 208, Not open to students who have had CS 211 or CS 310. Same as MIS 311.</td>
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</tr>
<tr>
<td>317</td>
<td>Data Structures and Algorithm Analysis</td>
<td>3 hrs.</td>
<td>Review of basic data structures such as stacks, queues, lists, trees. Graphs and algorithms for finding paths and spanning trees. Hashing and algorithms for dynamic storage allocation, garbage collection and compaction. Basic techniques for design and analysis of efficient algorithms for sorting, merging, and searching. Lab fee: Level 3. Prerequisite: CS 314 and MA 244.</td>
<td></td>
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</tr>
<tr>
<td>415</td>
<td>Introduction to Digital Computer Design</td>
<td>3 hrs.</td>
<td>Logic and electronic design of functional digital units, design of computer subsystems, flow of information, and logical flow diagrams in timing and control. Design of memory, arithmetic, and I/O units, binary and decimal machine arithmetic, and design of digital computer. Lab fee: Level 3. Prerequisite: CS 309.</td>
<td></td>
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</tr>
<tr>
<td>424</td>
<td>Introduction to Programming Languages</td>
<td>3 hrs.</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 3. Prerequisite: CS 317.</td>
<td></td>
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</tr>
<tr>
<td>470</td>
<td>Computer Applications in Economics and Business II</td>
<td>3 hrs.</td>
<td>Techniques in economic business modeling, case studies of business applications and computer simulations of business operations. Projects requiring independent research. Lab fee: Level 3. Prerequisite: CS 310 or CS 311; same as MIS 470.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>499</td>
<td>Senior Project</td>
<td>3 hrs.</td>
<td>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 reports on their work. Lab fee: Level 3. Prerequisite: CS 490; knowledge of the Pascal language is assumed.</td>
<td></td>
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</tr>
<tr>
<td>513</td>
<td>Computer Architecture</td>
<td>3 hrs.</td>
<td>(Not open to CS majors—See Graduate Catalog.)</td>
<td></td>
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</tr>
<tr>
<td>517</td>
<td>Data Structures</td>
<td>3 hrs.</td>
<td>(Not open to CS majors—See Graduate Catalog.)</td>
<td></td>
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</tr>
</tbody>
</table>
### Course Descriptions

#### 530 Artificial Intelligence  
3 hrs.
Basic methodologies and techniques: heuristic search, modeling and representation of knowledge, deduction and problem solving, languages and system. Some application areas: automatic programming, robots, machine vision, natural language systems, automatic-theorem proving, game playing, and information-processing psychology. Lab fee: Level 3. Prerequisite: CS 317 or CS 517 or approval of instructor.

#### 586 Microprocessor Architecture  
3 hrs.
History of microprocessors and typical applications; architecture: four, eight, and sixteen bit processors, register and bus structures, I/O and interrupt structures; memories: RAM, and ROM. Instruction sets, addressing modes, stacks, interfacing fundamentals; programming and interfacing projects. Lab fee: Level 3. Prerequisite CS 415 or 513.

### Additional Courses

- **603 Formal Languages and Mathematical Machine Theory**
- **612 Compiler Construction and Writing Systems**
- **613 Advanced Computer Architecture**
- **617 Design and Analysis of Algorithms**
- **624 Programming Languages**
- **640 Automatic Pattern Recognition**
- **642 Computer Processing of Digital Images**
- **645 Interactive Computer Graphics**
- **650 Software Engineering**
- **686 Microcomputer Systems**
- **687 Data Base Systems**
- **690 Operating Systems**
- **695-698 Selected Topics in Computer Science**
- **699 Master's Thesis**
- **703 Theory of Programming Languages**
- **713 Distributed Processing Systems**
- **730 Advanced Artificial Intelligence and Heuristic Programming**
- **735 Computer Vision**
- **742 Image Processing Algorithms and Architectures**
- **750 Advanced Software Engineering**
- **760 Pattern-Directed Inference Systems**
- **790 Advanced Operating Systems**
- **795-798 Advanced Selected Topics**
- **799 Doctoral Dissertation**
Environmental Science Program
Adjunct Professors Essenwanger, Hung; Schroer; Associate Professor Modlin (Acting Coordinator), Adjunct Assistant Professor McNider.

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 AOC major or his GER. Other required courses can be taken as electives, permitting the fully prepared bachelor’s candidate to complete requirements for his 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

GER (humanities and social sciences, EC or PSC recommended) .................. 36
Mathematics (including ST 281 if Level III placement) ............................. 9
Physics—Ph 101, 102 or 111, 112 ......................................................... 8
Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 335,
361, 362 .................................................................................. 22
Environmental Science—ES 102, 202, 303 or 304, 311, 321 ..................... 17
Biological Sciences—BYS 113, 114, 221, 312, 319, and MS 507, BYS 531
or BYS 561 .................................................................................. 23
BYS electives ................................................................. 12-14
One from 315, 317, 378 .................................................. 4-5
One from 562, 563, 564 .................................................. 4
One from 364, 368, 372 .................................................. 4-5
Computer Science—CS 113 .................................................. 3
Free electives (to include statistics if not MA level III placement) ............ 9-11

Requirements for the Environmental Science Certificate

Basic science courses (unless exempted by advanced placement and/or testing in each case): Biological Sciences 113, 114; Chemistry 121, 123, 125, 126; Environmental Science 101, 102; Physics 111, 112; two basic courses in statistics and/or computer science.

Environmental core courses:
BYS 312 Principles of Ecology
ES 321 Pollution Problems
ES 521 Environmental Data Analysis
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 525 Environmental Chemistry
- ISE 422 Systems Analysis
- ISE 427 Management Science
- ISE 524 Introduction to Human Engineering
- ME 549 Environmental Engineering
- ME 559 Selected Topics in Mechanical Engineering
- ES 303 Climatology
- ES 304 Meteorology
- ES 305 Hydrology
- 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 adviser in his department. Minor is tailored to student’s needs through consultation with department adviser and the Environmental Science Coordinator.

Environmental Science (ES)

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 3.

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 3. 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.

304 Meteorology 3 hrs.
Physical properties and dynamics of atmosphere, factors that govern weather conditions, meteorological factors affecting design and operation of aircraft, and weather research. Prerequisites: ES 201 and MA 151 or MA 154 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 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 113, 114, CHIOI (121); BYS 238 desirable.

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.

512 Environmental Transport 3 hrs.

521 Environmental Data Analysis 3 hrs.
Overview of computer hardware, software, communications, and terminals. Univac control languages, management information systems, overview of techniques of modeling, and simulation as applied to air, water, and noise pollution. Prerequisites: computer programming, systems analysis, and statistics.

525 Environmental Chemistry 3 hrs.
Principles of quantitative analyses related to minor components of a sample. Applications selected from principal analyses necessary to maintain environmental quality of air, water and soil. (Same as CH 525)

553 Atmospheric Radiation 3 hrs.
Principals of radiative transfer, blackbody radiation, absorbitivity-emissivity characteristics of the atmosphere, atmospheric optics, plane parallel models, clouds. Prerequisite: Junior standing and permission of instructor.

591 Review of Environmental Research 1-4 hrs.
Review of selected environmental science investigations. Prerequisite: approval of instructor.

593 Directed Studies in Environmental Science 1-4 hrs.
Supervised compilation, summarization, and discussions of environmental investigation, regulations, and topics. Examples of directed studies include: Atmospheric Physics, Environmental Biophysics, Atmospheric Dynamics, Atmospheric Thermodynamics. Prerequisite: permission of instructor.
Mathematics and Statistics Department

Professors Doss, Gibson (Chairman), Hoomani, Chang; Associate Professors Cook, Forte, Roach, Slater; Assistant Professors Cromer, Dow, Howell, Hammel, Krishna, Morales, Siegrist, Welstead; Instructors Dulin, Spilman.

Undergraduate Programs

The mathematics and statistics faculty offers courses in mathematics (MA) and statistics (ST) for a B.S. or B.A. degree in mathematics, a B.S. or B.A. degree in mathematics education, or a minor in mathematics for students majoring in other areas. Courses also satisfy individual needs to supplement other areas of study and to satisfy the general education requirements (GER).

All AOC’s with a major in mathematics must include MA 153, 154, 233, 244, 251, 440, and 452/501 (basic core—21 semester hours). Other MA and ST courses are required, depending on the curriculum the student is pursuing. Details concerning these courses are given in Curricula I, II, and III. All MA electives must be preapproved by the student’s faculty adviser.

All AOC’s with a double major in mathematics education and elementary education (Curriculum IV) must include MA 153, 154, 233, 244, 333, 385, 440, and two approved MA courses at 300 level or above.

Students majoring in other academic areas may include only MA courses numbered above 150 in their AOC. A typical mathematics minor consists of MA 153, 154, 233, 244, 251, and two approved MA courses numbered above 300. All MA minors must include MA 153 and 154.

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 (in some cases) a calculus readiness test.

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 (104), 143, 151, 244, ST 281, MA 333, and 385 beginning with the course indicated by their placement level.

Students who may 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.

Students with various placement levels must begin their MA courses for credit as follows: Level I—MA 104 or 105 or 119; Level II—MA 121 or 143; Level III—MA 151 or 153.

The following courses are listed as examples of approved curricula. Students who feel that substitutions can produce a program better suited for their needs should consult their faculty adviser about the feasibility of such substitutions.

Curriculum I

B.A. or B.S. degree with a major in mathematics

<table>
<thead>
<tr>
<th>General Education Requirements:</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English and history</td>
<td>18</td>
</tr>
<tr>
<td>Language (French, German or Russian recommended)</td>
<td>6-12</td>
</tr>
<tr>
<td>Social science (one discipline)</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics (courses numbered below 150)</td>
<td>0-6</td>
</tr>
<tr>
<td>CS 113 and ST 281</td>
<td>6</td>
</tr>
</tbody>
</table>
Laboratory science ........................................................................................................ 8-16
(Note: Math majors taking physics courses must choose from the sequence PH 111, PH 112, PH 113.)
For B.A. ...................................................................................................................... 8 hours in physics
For B.S. ...................................................................................................................... 8 hours in physics and 8 hours in biological science or chemistry
Mathematics Major (minimum requirements):
MA basic core, MA 352, and two of MA 425, 542, 551 ........................................................................ 30
MA electives (must be preapproved by student’s mathematics adviser and be at 300 level or above) ...................................................................................................................... 6
(Note: MA 570 is recommended for students preparing for graduate study in mathematics.)
Minor ................................................................................................................................ 21-24
Electives (to total number of semester hours to 128) ........................................................................ 4-27

Curriculum II
B.A. or B.S. degree with a major in mathematics. This plan meets requirements for an Alabama Class B High School Teachers Certificate.

GER (humanities and social sciences) .................................................................................. 30-36
Mathematics - MA basic core, MA 333, 385 and 6 hours of electives numbered 300 or above, including at least one 500 level course, preapproved by student’s mathematics adviser (minimum requirements) ...................................................................................................................... 33
Physics - PH 111, 112 ...................................................................................................... 8
Statistics - ST 281 .......................................................................................................... 3
Computer Science - CS 113 ............................................................................................... 3
Biological Sciences (minimum requirement) ........................................................................ 4
Professional Education Courses .......................................................................................... 33
Electives (to total number of semester hours to 128) ........................................................................ 8-14

NOTE:
Students pursuing this curriculum should consult with the Department of Education early in their program.

Curriculum III
B.A. or B.S. degree with a major in mathematics. This plan meets requirements for an Alabama Class B Middle/Junior High School Teachers Certificate.

GER (humanities and social sciences) .................................................................................. 30-36
Mathematics (minimum requirements — same as Curriculum II) ........................................................................ 33
Physics - PH 111, 112 ...................................................................................................... 8
Statistics - ST 281 .......................................................................................................... 3
Computer Science - CS 113 ............................................................................................... 3
Biological Sciences (minimum requirement) ........................................................................ 4
Professional Education Courses .......................................................................................... 33
Electives (to total number of semester hours to 128) ........................................................................ 8-14

NOTE:
Students pursuing this curriculum should consult with the Department of Education early in their program.
Curriculum IV
B.A. or B.S. degree with a double major in mathematics education and elementary education. This plan meets requirements for an Alabama Class B Elementary Teachers Certificate.

(NOTE: For general education requirements and professional education courses see Department of Education section.)

Mathematics Education (minimum requirements applicable to this AOC only.) MA 153, 154, 233, 244, 333, 385, 440 and two MA electives numbered 300 or above which have been preapproved by student's mathematics adviser .................................................. 27

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. Students who elect this curriculum will not be adequately prepared for graduate study in mathematics.

Approved Minors
A student who majors in mathematics is strongly encouraged to select a minor in science or engineering. Typically, such a student minors in computer science, physics, operations research, or chemistry, but other options are available. Any minor must include at least 21 hours in one discipline, with a minimum of 6 hours at 300 level or above. All courses in a minor must be approved by the department concerned and the student’s mathematics faculty adviser.

Graduate Programs
See the Graduate Catalog for complete descriptions of these programs and of all courses at 600 level or above.

Mathematics (MA)
NOTE:
1. No student may receive more than 6 hours credit for MA courses numbered below 150 or more than 3 hours credit for MA courses numbered below 120.
2. Students placed at Level II may receive no more than 3 hours credit for MA courses numbered below 150.
3. Students placed at Level III will receive no credit for MA courses numbered below 150.
4. Students with deficiencies of high school algebra or high school geometry credit must remove these deficiencies before enrollment in MA courses numbered 100 or above.
5. No student may enroll in his first MA course at UAH before determination of his placement level.

004 Basic Algebra No credit
For students with a deficiency in high school credit in algebra or a need for algebra review.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>033</td>
<td>High School Geometry</td>
<td>No credit</td>
<td>For students with a deficiency in high school credit in geometry. Prerequisite: MA 004 or Level I placement.</td>
</tr>
<tr>
<td>104</td>
<td>Introduction to Contemporary Mathematics</td>
<td>3 hrs.</td>
<td>Prerequisites: one unit of high school algebra and Level I placement.</td>
</tr>
<tr>
<td>105</td>
<td>College Algebra</td>
<td>3 hrs.</td>
<td>No credit given to students who have received credit for another MA course or who are placed at Level II or above.</td>
</tr>
<tr>
<td>119</td>
<td>Precalculus I</td>
<td>3 hrs.</td>
<td>Should be taken only by students who are going to MA 121 and MA 153.</td>
</tr>
<tr>
<td>121</td>
<td>Precalculus II</td>
<td>3 hrs.</td>
<td>Should be taken only by students who are going to MA 153.</td>
</tr>
<tr>
<td>143</td>
<td>Finite Mathematics</td>
<td>3 hrs.</td>
<td>No credit given to students who have successfully completed an MA course numbered above 121 or who place at Level III.</td>
</tr>
<tr>
<td>151</td>
<td>Survey of Elementary Calculus</td>
<td>3 hrs.</td>
<td>Students planning to continue in calculus should begin with MA 153 instead of this course.</td>
</tr>
<tr>
<td>153</td>
<td>Calculus I</td>
<td>3 hrs.</td>
<td>Limits, continuity, derivatives, chain rule, implicit differentiation, applications of the derivative, conic sections.</td>
</tr>
<tr>
<td>154</td>
<td>Calculus II</td>
<td>3 hrs.</td>
<td>Limits, continuity, derivative, differentials, chain rule, implicit differentiation, applications of the derivative, conic sections.</td>
</tr>
</tbody>
</table>
233 Calculus III
3 hrs.
Polar coordinates, sequences and series, vectors and analytic geometry in three dimensions, vector-valued functions. Prerequisite: MA 154. Students are advised not to take MA 233 before earning a grade of "C" or better in MA 154.

244 Introduction to Linear Algebra
3 hrs.
No credit given to students who have successfully completed either MA 440 or MA 502. 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 151 and approval of instructor.

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.

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.

352 Introduction to Differential Equations
3 hrs.
First-order differential equations, linear differential equations with variable and constant coefficients, variation of parameters, Laplace transforms, series solutions, selected applications. Prerequisite: MA 251. MA 244 recommended before taking this course.

355 Mathematical Techniques in Computer Graphics
3 hrs.
A study of some of the mathematics used in computer graphics. Rotations, translations, projections, hidden line removal. Methods for rotating three space which involve real and complex matrix multiplication and the quaternionic number system are presented. Students participate in a computer graphics project which further illustrates the mathematical concepts discussed in class. Lab fee: Level 4. Prerequisites: MA 244, 251, CS 113.

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, and use of statistical package MINITAB. Prerequisites: MA 151 or 154, and one MA course at the 200 level or above.

415 Introduction to Numerical Analysis I
3 hrs.
Iterative methods for solution of nonlinear equations, error analysis, acceleration of convergence, interpolation and approximation of functions, numerical integration. Lab fee: Level 3. Prerequisites: MA 244, 251, CS 113 or equivalent.

425 Introduction to Mathematical Modeling
3 hrs.
The purpose of this course is to apply mathematics by formulating, analyzing, and criticizing mathematical models of various phenomena. Examples will be chosen from the physical, biological, and social sciences. The course 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, 352.

440 Algebraic Structures with Applications
3 hrs.
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 (See MA 502) 3 hrs.

490 Selected Topics in Undergraduate Mathematics 1-3 hrs.
Courses in requested undergraduate topics. Prerequisite: approval of instructor.

502 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 352 or 440 or approval of instructor.

515 Introduction to Numerical Analysis II 3 hrs.
Numerical solution of ordinary differential equations, solution of linear and nonlinear algebraic systems, iterative methods in matrix algebra, error analysis, and convergence properties of selected methods. Lab fee: Level 3. Prerequisites: MA 244, 352, MA 415 or ME 396, CS 113 or equivalent.

521 Introduction to Complex Analysis 3 hrs.
Complex algebra, analytic functions, Cauchy-Riemann equations, exponential, trigonometric, and logarithmic functions, integration, Cauchy integral theorem, Morera’s theorem, Liouville’s theorem, maximum modules theorem, residue theory, Taylor and Laurent series, and applications. Prerequisite: MA 502 or approval of instructor.

525 Intermediate Differential Equations 3 hrs.
Systems of linear ordinary differential equations, first order systems with constant coefficients, plane autonomous systems, stability, and selected topics related to properties and characterization of solutions. Prerequisite: MA 352 or approval of instructor.

526 Partial Differential Equations I 3 hrs.
Systems of first order ordinary differential equations, first order quasilinear partial differential equations, general first order partial differential equation by Cauchy’s method of characteristics, higher-order equations, canonical forms, separation of variables, Fourier series, wave equation, heat equation, and potential equation. Prerequisite: MA 352.

527 Vector Analysis 3 hrs.
Brief review of vector algebra and calculus of vector-valued functions, representation of vector operators in curvilinear coordinates, line and surface integrals, theorems of Gauss, Green, and Stokes, Jacobian, and changes of variables in multiple integrals. Prerequisite: MA 352 or approval of instructor.

530 Introduction to Fourier Analysis 3 hrs.
Fourier series and Fourier transforms with emphasis on the one- and two-dimensional transform. Topics include the basic properties of the Fourier transform, the computation and analysis of the transforms of various functions and functionals, Green’s functions, convolution, and applications. Prerequisites: MA 244, 352.

534 Introduction to Integral Equations 3 hrs.
Volterra equations, convolution equations, the resolvent, Fredholm equations, Green’s functions, the Fredholm alternative, and approximate methods of solution. Prerequisites: MA 244, 352.

540 Combinatorics 3 hrs.
Counting, pigeonhole principle, permutations and combinations, generating functions, principle of inclusion and exclusion, Polya’s theory of counting. Prerequisite: MA 440 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 440 or approval of instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>554</td>
<td>Linear Algebra</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Vector spaces, bases, linear transformations, matrices,</td>
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<tr>
<td></td>
<td>determinants, eigenvalues, similarity, matrix limits,</td>
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<tr>
<td></td>
<td>dual spaces, bilinear forms, quadratic forms, orthogonal</td>
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<tr>
<td></td>
<td>and unitary transformations. Prerequisites: MA 244 and</td>
<td></td>
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<tr>
<td></td>
<td>at least one MA course at 300 level or above.</td>
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</tr>
<tr>
<td>551</td>
<td>Functions of Several Variables</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Topology of $\mathbb{E}_n$, limits, continuity, and</td>
<td></td>
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<tr>
<td></td>
<td>differentiation of functions of several real variables,</td>
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<tr>
<td></td>
<td>Jacobians, implicit function and inverse function</td>
<td></td>
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<tr>
<td></td>
<td>theorems, Riemann integration of functions of several</td>
<td></td>
</tr>
<tr>
<td></td>
<td>real variables, and change of variables theorem for</td>
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<tr>
<td></td>
<td>multiple integrals. Prerequisite: MA 502.</td>
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</tr>
<tr>
<td>570</td>
<td>Metric Spaces with Applications</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Basic metric spaces, continuous functions, compactness,</td>
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<tr>
<td></td>
<td>connectedness, completeness, Arzela-Ascoli theorem,</td>
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<td></td>
<td>Stone-Weierstrass theorem, contraction mappings,</td>
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<tr>
<td></td>
<td>applications to existence and uniqueness of solutions</td>
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<tr>
<td></td>
<td>of differential and integral equations. Prerequisites:</td>
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<td></td>
<td>MA 502, 551 or approval of instructor.</td>
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<tr>
<td>585</td>
<td>Probability</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Probability theory and its applications. Independent</td>
<td></td>
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<tr>
<td></td>
<td>trails, discrete and continuous random variables, law</td>
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<td></td>
<td>of large numbers, basic distributions, sums of</td>
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<td></td>
<td>independent random variables, sequences of random</td>
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<td></td>
<td>variables, central limit theorem, and convergence in</td>
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<td></td>
<td>distribution. Prerequisites: MA 251 and one of MA 385,</td>
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<td></td>
<td>ISE 390, ST 281, or approval of instructor.</td>
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</tr>
<tr>
<td>590</td>
<td>Selected Topics in Mathematics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td></td>
<td>Courses in requested selected topics. Prerequisite:</td>
<td></td>
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<tr>
<td></td>
<td>Approval of instructor.</td>
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<tr>
<td>614</td>
<td>Numerical Methods for Linear Algebra</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>615</td>
<td>Numerical Methods for Partial Differential Equations</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>621</td>
<td>Special Functions</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>625</td>
<td>Calculus of Variations</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>626</td>
<td>Partial Differential Equations II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>633</td>
<td>Geometry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>640</td>
<td>Graph Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>643</td>
<td>Group Theory</td>
<td>3 hrs.</td>
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<tr>
<td>644</td>
<td>Matrix Theory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>652</td>
<td>Advanced Differential Equations</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>653</td>
<td>Real Analysis I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>656</td>
<td>Complex Analysis I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>670</td>
<td>Introduction to Functional Analysis</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>671</td>
<td>General Topology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>685</td>
<td>Stochastic Processes with Applications I</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>686</td>
<td>Stochastic Processes with Applications II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>690</td>
<td>Special Topics in Mathematics</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>
699 Master's Thesis 3 hrs.
754 Real Analysis II 3 hrs.
756 Complex Analysis II 3 hrs.
790 Graduate Seminar 3 hrs.
799 Doctoral Dissertation 3, 6, or 9 hrs.

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 statistical package MINITAB. Lab fee: Level 3. Prerequisite: MA 154 or 151. Student cannot receive credit for more than one of ST 281, MSC 287, or AHS 300.

381 Elements of Statistical Analysis II 3 hrs.
Analysis of variance and multiple comparisons, analysis of covariance, multiple regression and correlations, nonparametric methods, and use of statistical package MINITAB. Lab fee: Level 3. Prerequisite: ST 281 or approval of instructor.

687 Theory of Statistics I 3 hrs.
787 Theory of Statistics II 3 hrs.
Physics Department

Professors Anderson, Chan, Smalley, Sung, Torr; Research Professors Barr, Hendricks, McKnight; Associate Professors Bartell, Davis, Emshie, Horwitz; Associate Research Professor Comfort; Assistant Professor M. K. Wu; Assistant Research Professors Olsen, Paciesas; Adjunct Professors Duthie, Stuhlinger, Tandberg-Hanssen, S.T. Wu; Adjunct Associate Professors Fennelly. Adjunct Assistant Professor Stone.

Undergraduate Program

The physics department offers lectures and laboratory courses necessary for a student to work professionally in physics and/or optics at the B.S. level or to prepare for graduate school.

The basic courses for a B.S. degree with a major in physics include PH 111, 112, 113, 201, 231, 241, 310, 311, 312, 321, 351. The basic courses for a B.S. degree in physics with major emphasis in optics include PH 111, 112, 113, 201, 231, 241, 310, 311, 331, 351, 431. Five approved AOC’s are listed. Other AOC’s may be approved after consultation with student’s faculty adviser.

A minor in physics consists of the basic courses for a B.S. degree in physics as listed above.

Curriculum I

For working professionally at the B.S. level or preparation for graduate school.

<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, 201, 231, 241, 310, 311, 312, 321, 331, 337, 351, 401, 431, one senior lab at 400 level, 551, 552</td>
</tr>
<tr>
<td>Mathematics—MA 153, 154, 233, 244, 251, 352, 502, 521</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126</td>
</tr>
<tr>
<td>Electives</td>
</tr>
</tbody>
</table>

Curriculum II

For working professionally in optics at the B.S. level.

<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, 201, 231, 241, 310, 311, 331, 342, 343, 351, 412, 434, 442, 444, 545</td>
</tr>
<tr>
<td>Mathematics—MA 153, 154, 231, 244, 251, 352, 502, 521, 530</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126</td>
</tr>
<tr>
<td>Electives</td>
</tr>
</tbody>
</table>

NOTE: For entry into a graduate program in physics, students should include PH 321, 401 in their program of study.

Curriculum III

Natural science AOC with emphasis on physics. This curriculum will satisfy requirements for the premedical program.

<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, 106, 107, 201, 231, 241, 310, 311, 312, 351</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126, 223, 331, 332, 333, 335, 336</td>
</tr>
</tbody>
</table>
Mathematics—MA 153, 154, 233, 244, 251, 352 .............................................. 18  
Biological Sciences—BYS 113-114, 319 ................................................................. 11  
Electives .............................................................................................................. 12-15  

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.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
<td>30-36</td>
</tr>
<tr>
<td>Physics—PH 111, 112, 113, 201, 231, 241, 310, 311, 312, 321, 331, 351, 401, 431, 521</td>
<td>40</td>
</tr>
<tr>
<td>Mathematics—MA 153, 154, 233, 244, 251, 352</td>
<td>18</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126</td>
<td>8</td>
</tr>
<tr>
<td>Engineering—ME 198, 294, 295, 352, 370, 487, 488, 493; ECE 300, 301, 311, 313, 407; ISE 390</td>
<td>34</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
</tbody>
</table>

NOTE: This curriculum will probably require more than the minimum total of 128 semester hours.

**Curriculum V**  
B.S. degree with major in physics. This plan meets requirements for an Alabama Class B High School Teachers Certificate.

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GER (humanities and social sciences)</td>
<td>30-36</td>
</tr>
<tr>
<td>Physics—PH 111, 112, 113, 201, 231, 241, 310, 311, 312, 321, 331, 351, 401, 431, one senior lab at 400 level, 551, 552</td>
<td>48</td>
</tr>
<tr>
<td>Mathematics—MA 153, 154, 233, 244, 251, 352, 502, 521</td>
<td>24</td>
</tr>
<tr>
<td>Chemistry—CH 121, 123, 125, 126</td>
<td>8</td>
</tr>
<tr>
<td>Biological Sciences (minimum of 4 hours)</td>
<td>4</td>
</tr>
<tr>
<td>Second Teaching Area</td>
<td>27</td>
</tr>
<tr>
<td>Professional Education Courses</td>
<td>33</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 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.

**Graduate Programs**  
For graduate courses and programs, refer to the UAH Graduate Catalog.
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. Lab fee: Level 3. Prerequisite: high school algebra and trigonometry. Fall. Same as PH 106.

107 General Astronomy II  

Physics (PH)

Prerequisites for physics courses listed may be waived by instructor or department chairman for auditors or students with equivalent experience.

101 General Physics  
Introductory course for nonscience 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. Lab fee: Level 3. Prerequisite: high school algebra. Fall, summer.

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. Lab fee: Level 3. Prerequisite: high school algebra and trigonometry. Fall. (Same as AST 106)

107 General Astronomy II  

111 General Physics with Calculus I  
Introductory course 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 and wave motion. Laboratory included. PH 111 and 112 satisfy laboratory science requirements. Lab fee: Level 3. Prerequisite: MA 153. Fall, winter, spring, summer.

112 General Physics with Calculus II  
Continuation of PH 111. Heat and thermodynamics, basic electricity, electric and magnetic fields, electromagnetic waves, and optics. Laboratory included. Lab fee: Level 3. Prerequisite: MA 154. Fall, winter, spring, summer.

113 General Physics with Calculus III  
Continuation of PH 111 and 112. Modern physics part of general physics sequence. Relativity, quantum effects, atomic and nuclear structure, and elementary particles. Prerequisites: PH 112, MA 233. Fall, spring.

295
201 Mechanics 3 hrs.
Galilean invariance, energy and momentum; nonrelativistic particle kinematics and dynamics; harmonic oscillator; Lorentz transformations; relativistic momentum, energy, and dynamics. Prerequisite: PH 101 or 111. Prerequisite or parallel: MA 233. Parallel MA 244. Fall.

231 Electricity and Magnetism 3 hrs.
Basic concepts of electrostatics, steady currents, magnetic fields, electromagnetic induction and electric and magnetic polarization of matter which focuses attention on charge conservation, charge invariance and the meaning of field. Prerequisite: PH 201. Parallel or prerequisite: MA 251. Winter.

241 Waves and Oscillations 3 hrs.
Periodic phenomena, free oscillators, forced oscillators, traveling waves, modulation, and Fourier analysis. Prerequisite: PH 231. Prerequisite or parallel: MA 352. Spring.

310 Intermediate Laboratory I 1 hr.

311 Intermediate Laboratory II 1 hr.
Electronics instrumentation, electric fields, motion of charged particles. Lab fee: Level 3. Prerequisite: PH 310. Prerequisite or parallel: PH 241. Spring.

312 Intermediate Laboratory III 1 hr.
Electric circuits, acoustics and fluids, optics. Lab fee: Level 3. Prerequisite: PH 311. Fall.

321 Thermal and Statistical Physics 3 hrs.
Microscopic systems, equilibrium, heat and temperature, irreversibility, and probability and statistics. Thermal interactions, approach to equilibrium, mean energy and pressure of ideal gas. Microscopic theory, absolute temperature, entropy, canonical distribution, and equipartition of energy. Prerequisite: 231. Spring.

331 Intermediate Electricity and Magnetism I 3 hrs.
Basic concepts of electrostatics, electric potential theory, electric fields and currents, fields of moving charge including relativistic treatment, magnetic fields, Maxwell's equation. Prerequisites: PH 231, MA 251. Prerequisite or parallel: MA 352. Winter.

337 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. Lab fee: Level 3. Prerequisite: PH 112. Summer.

342 Geometrical Optics I 3 hrs.
General 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. Prerequisite: PH 241. Fall.

343 Physical Optics I with Laboratory 4 hrs.

351 Quantum Physics 3 hrs.
Quantum hypothesis, physical quantities, theory of measurement. Uncertainty principle, energy levels, photons, particles, de Broglie waves. Phenomenological wave mechanics, Schrödinger's wave equation, hydrogen-like systems, interactions. Prerequisite: PH 241. Fall.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>412</td>
<td>Geometrical Optics Laboratory</td>
<td>1</td>
<td>Experiments in optics. Introduction to Nodal slide, cardinal points, pupils and stops, illumination, relay lens set-up, Matrix method of lens systems and Delano diagram lens system. Prerequisite: PH 342, parallel PH 442. Lab fee: Level 3. Fall.</td>
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</tr>
<tr>
<td>413</td>
<td>Nuclear Physics Laboratory</td>
<td>1</td>
<td>Statistics in counting processes, beta-ray continuum, scintillation spectroscopy. Lab fee: Level 3. Fall.</td>
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</tr>
<tr>
<td>414</td>
<td>Solid State Physics Laboratory</td>
<td>1</td>
<td>Fundamental solid state experiments including electron paramagnetic resonance, nuclear magnetic resonance, Hall effect, cyclotron resonance, Mossbauer spectroscopy. Lab fee: Level 3. Winter.</td>
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</tr>
<tr>
<td>415</td>
<td>X-Ray Laboratory</td>
<td>1</td>
<td>Powder and single crystal X-ray photography with theory as needed. Lab fee: Level 3. Spring.</td>
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</tr>
<tr>
<td>416</td>
<td>Senior Laboratory</td>
<td>1</td>
<td>Selected experiments from PH 412 - 415. Lab fee: Level 3. Offered upon demand.</td>
<td></td>
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</tr>
<tr>
<td>420</td>
<td>Senior Thesis</td>
<td>3</td>
<td>Semioriginal work performed under direction of faculty member. Lab fee: Level 4. Offered upon demand.</td>
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</tr>
<tr>
<td>431</td>
<td>Intermediate Electricity and Magnetism II</td>
<td>3</td>
<td>Continuation of PH 331. Development of Maxwell’s equations for time-varying fields, basic concepts of AC circuit theory, electric fields in matter, magnetic fields in matter, selected discussions on modern applications of electricity and magnetism. Prerequisite: PH 331. Spring.</td>
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</tr>
<tr>
<td>442</td>
<td>Geometrical Optics II</td>
<td>3</td>
<td>Continuation of PH 342. Linear transformations, preliminary lay-out-trial to first order, Gaussian and paraxial methods, stops and apertures, matrix methods, the Delano or y-y diagram and the introduction to aberrations. Prerequisite: PH 342. Fall.</td>
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<tr>
<td>444</td>
<td>Electro-Optics</td>
<td>4</td>
<td>Plank’s law, blackbodies and blackbody simulators, propagation of radiant energy, detectors, noise, basic circuits for photoelectric detectors. Prerequisite: PH 342. Spring.</td>
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<tr>
<td>506</td>
<td>Introduction to Astrophysics of Stellar Systems</td>
<td>3</td>
<td>Analysis of structure of main sequence stars; radiation theory, color-magnitude diagrams and their interpretation. Dynamics of simple and many-body systems — the restricted 3-body problem, Hamilton-Jacobi methods, Liouville’s and Jean’s theorems and their application to galactic structure. General relativity and application to cosmology. Prerequisites: PH 401, MA 352. Spring.</td>
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</tr>
<tr>
<td>521</td>
<td>Thermal Physics</td>
<td>3</td>
<td>Thermal phenomena on macroscopic and statistical basis and principles and laws governing them. Prerequisite: PH 431. Summer.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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<tr>
<td>536</td>
<td>Introduction to Space Physics</td>
<td>3 hrs.</td>
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<td></td>
<td>Charged particles in electric and magnetic fields, cosmic rays and trapped radiation; introduction to plasmas, including collisions and macroscopic effects. Prerequisite: PH 321, 431. Spring.</td>
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<tr>
<td>541</td>
<td>Optics I</td>
<td>3 hrs.</td>
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<td></td>
<td>Geometrical optics review. Physical optics: interference, diffraction, partial coherence, polarization, interaction of radiation with matter. Prerequisite: PH 431. Fall.</td>
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<tr>
<td>545</td>
<td>Introduction to Lasers</td>
<td>3 hrs.</td>
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<tr>
<td>551</td>
<td>Introductory Quantum Mechanics</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Background of quantum theory, wave-particle duality and uncertainty principle, basic postulates of quantum mechanics, angular momentum and spin; simple systems in one, two, and three dimensions. Perturbation theory, scattering theory, applications. Prerequisites: PH 351, 401, 431. Fall. (Same as CH 553).</td>
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</tr>
<tr>
<td>552</td>
<td>Introductory Quantum Mechanics</td>
<td>3 hrs.</td>
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<tr>
<td></td>
<td>Continuation of PH 551. Prerequisite: PH 551. Winter. Same as CH 554.</td>
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</tr>
<tr>
<td>601</td>
<td>Classical Dynamics I</td>
<td>3 hrs.</td>
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<td>607</td>
<td>Mathematical Methods I</td>
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<td>Kinetic Theory and Statistical Mechanics I</td>
<td>3 hrs.</td>
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<td>631</td>
<td>Electromagnetic Theory I</td>
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<td>641</td>
<td>Optics II</td>
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<td>Radiometry</td>
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<td>Infrared Science</td>
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<td>Introduction to Solid State Physics</td>
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<td>680-689</td>
<td>Selected Topic</td>
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<td>699</td>
<td>Master’s Thesis</td>
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<td>702</td>
<td>Classical Dynamics II</td>
<td>3 hrs.</td>
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<td>705</td>
<td>Relativity</td>
<td>3 hrs.</td>
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<td>Problems in Physics I</td>
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<td>Quantum Mechanics III</td>
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<td>780-789</td>
<td>Selected Topics</td>
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<td>792</td>
<td>Physics Seminar</td>
<td>No credit</td>
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<tr>
<td>795</td>
<td>Advanced Physics Project Laboratory</td>
<td>3 or 6 hrs.</td>
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<tr>
<td>799</td>
<td>Doctoral Dissertation</td>
<td>3, 6, 9 hrs.</td>
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</table>
Director, Delmus E. Williams, B.A., M.S.L.S., Ph.D.

Associate Professors: Jean Perreault, Elizabeth Pollard, John Warren; Assistant Professor: J. Craig McLean; Instructor: Kay Young.

Courses in bibliography are offered as electives only, with the exception of Bibliography of Business and Economics (BIB 230) which is a required course for students in the School of Administrative Science. Elective courses neither form nor contribute to a cluster; nor do they contribute to the certification requirements for teacher librarians. No credit is given toward GER.

**Bibliography (BIB)**

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<tr>
<td>100</td>
<td>Introduction to Library Research</td>
<td>1 hr.</td>
<td>Organization of university libraries and their collections, use of major reference sources, and techniques of successful research.</td>
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<td>230</td>
<td>Bibliography of Business and Economics</td>
<td>1 hr.</td>
<td>Library research methods in business and economics; its production, organization and utilization of information; its reference and research materials.</td>
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<tr>
<td>310</td>
<td>Bibliography of British and American Philology</td>
<td>1 hr.</td>
<td>Library research methods in British and American philology; production, organization, and utilization of information; reference and research materials. Alternate years.</td>
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<tr>
<td>316</td>
<td>Bibliography of German Philology</td>
<td>1 hr.</td>
<td>Library research methods in German philology; production, organization, and utilization of information; reference and research materials. Alternate years.</td>
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<tr>
<td>318</td>
<td>Bibliography of Romantic Philology</td>
<td>1 hr.</td>
<td>Library research methods in romantic philology, production, organization, and utilization of information; reference and research materials. Alternate years.</td>
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<tr>
<td>320</td>
<td>Bibliography of American History</td>
<td>1 hr.</td>
<td>Library research methods in the subject; production, organization, and utilization of information; reference and research materials.</td>
</tr>
<tr>
<td>345</td>
<td>Bibliography of the Health Sciences</td>
<td>1 hr.</td>
<td>Library research methods in health sciences; production, organization, and utilization of information; reference and research materials.</td>
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</table>
360 Bibliography of Behavioral Science
Origin and terminology of behavioral science; production and utilization of information; reference and research materials.

380 Bibliography of Music
Library research methods in music; production, organization, and utilization of information; reference and research materials. Alternate years.

385 Bibliography of Art
Library research methods in art; production, organization, and utilization of information; reference and research materials. Alternate years.

400 Theory of Bibliographical Order
General structures of systems of bibliographical order: hierarchical trees, alphabetical files, juxtaposition and syndesis, facet analysis, thesauri. Prerequisite: BIB 100 or admission to an MLS program.
Division of Continuing Education

Director C. Michael Oliver, B.S., M.S., Ed.D.

General Information
The Division of Continuing Education (DCE) is the academic unit that responds to the special educational needs of the nontraditional student. In cooperation with schools of the university, community groups, professional associations, and other agencies, the DCE offers a wide range of credit and noncredit courses, conferences, seminars, and professional development activities that supplement standard offerings of the university.

To accomplish this objective, programs in professional fields are administered through three units—Technical Studies, Management Studies, and Special Studies. A fourth unit, Community Services, administers noncredit activities in areas not allied with specific professional schools. The following sections describe services of these units.

Technical Studies
The Technical Studies’ missions are to remain abreast of state-of-the-art developments in science and technology and to ensure that course offerings reflect the latest needs of the North Alabama technical community. Activities fall into three categories: (1) activities that comprise in-service training programs specifically developed to meet the needs of industrial and governmental organizations; (2) refresher courses in various scientific and technical areas; and (3) activities that disseminate technology transfer. The purpose of technical studies is to offer additional educational opportunities to groups and individuals who desire technological and scientific studies apart from or beyond degree sequences and to those with skills that require upgrading or updating.

Management Studies
The mission of Management Studies is to provide top-flight continuing education activities for business and government units in the area through sponsoring workshops and seminars. These services range from one-day sessions on specific managerial problems to sustained sequences of classes tailored for the individual needs of business organizations. They are scheduled for the convenience of the greatest number of attendees. Activities are offered in the facilities of industrial and governmental organizations. Management Studies currently offers certificate
programs in supervisory development, accounting, professional secretarial career development, human resource development and management communications.

Special Studies
Special Studies, in cooperation with the academic units of the university, offers credit courses to non-traditional students who cannot take advantage of the regularly scheduled courses offered at UAH.

Graduate and undergraduate courses are offered both on and off campus. Weekend college and early bird programs are two means used to serve special scheduling needs. Through the weekend college, one can earn credit toward a degree including the completion of the master’s degree in administrative science. The early bird courses are offered in the morning prior to the traditional work day.

Other courses and seminars are offered for credit to meet special requirements for professional re-licensure for people in the health and teaching fields. For example, in the health field, the department plays a key role in delivering seminars and workshops for nursing professionals so that they are fully trained in advances made in their fields.

Health, Physical Education and Community Services
This unit develops and administers credit and noncredit activities that respond to needs of people who wish to study for personal enrichment, who want to improve their skill in an avocation or a sport, who are considering a return to school and want a noncredit transitional experience, or who need information about basic skills necessary before entering or reentering the work force. Among current offerings in Community Services are general categories of career development, personal development, women's studies, and recreation. For credit offerings see section entitled Health and Physical Education.

Professional Development Certificate Programs
The Division of Continuing Education in cooperation with the Schools of Administrative Science, Engineering, and Sciences offers the Professional Development Certificate Program. This program is aimed at four objectives: (1) To refresh skills that are lost if not used; (2) To update professional knowledge; (3) to provide an achievement goal through completion of a coordinated, individually structured program of studies; and (4) To provide standardization of certification requirements recognizable by employers, professional societies, and licensing agencies.

The non-traditional approach taken in the program may involve not only classroom credit courses, but also selected short courses, seminars, workshops, research projects, and publications. In the areas of science and engineering, the requirements for the certificate are the satisfactory completion of ten 40-hour courses or their equivalent as determined by the candidate's adviser. Programs are flexible and are planned to meet the specific needs of the individual in such areas as microprocessor technology, environmental science, and energy studies. Other certificate programs include supervisory development, professional secretarial career development, management communication, and executive development.

Admission and Credit
Application for and admission to noncredit courses may be completed during registration. In general these courses are open to all adults, but prerequisites are
necessary for certain advanced courses. Where appropriate, registrants in noncredit programs are awarded continuing education units (CEU’s). The CEU is a nationally recognized standard of measurement of participation in noncredit continuing education programs. The CEU system offers a way of helping people gain recognition for their efforts to update and broaden their knowledge and skills. It also provides a standardized unit and record system helpful in professions where continuing education is mandated. DCE maintains a permanent achievement record for all students awarded CEU’s.

Persons wishing to register for credit courses offered through DCE must be admitted to UAH as regular or special nondegree students.

Offerings Available
Some courses are given on a periodic basis, but many offerings are designed to meet current needs or interests. Consequently, offerings vary considerably with time. Brochures describing the offerings during various periods are available, and people interested in receiving these brochures should contact the Division of Continuing Education. Inquiries concerning the development of special courses are invited.

Fees
Full-term credit courses offered by DCE follow the fee schedule of UAH, and students may include these courses under the maximum fee structure that does not apply to short-term specially designed credit courses and noncredit offerings.

Other Services
Listener’s License Program
DCE, with the cooperation and participation of academic departments throughout the university, offers the Listener’s License Program to all interested individuals. The objective of this program is to make the university resources of knowledge, skill, and artistry available to all members of the surrounding community.

People this program benefits include the following:
(1) those at or approaching retirement age who desire further education in preparation for the change in themselves and their life styles
(2) those who need to acquire or maintain skills necessary to adjust to the rapidity of changes in business and professional fields
(3) younger people who will soon be choosing a career
(4) those of all ages who seek educational enrichment to increase their enjoyment of life.

Participants in the Listener’s License Program may attend selected university classes for a fee of $25 a course. They are passive participants and do not take part in class discussion or testing unless the instructor invites their participation.

Registration is through the Division of Continuing Education. A record of listener’s-licensed participants is also maintained by DCE. (No academic or CEU credit is awarded to involved participants.)

Courses attended under the Listener’s License Program cannot be challenged for credit unless full tuition for the class is paid. Participants must be at least sixteen years of age or a high school senior. Students under disciplinary or academic suspension from any college or university are ineligible to register as a listener.
Conferences
DCE provides a wide variety of conference services to assist university departments, and educational businesses, industrial, and governmental groups in setting up conferences, institutes, workshops, or special training programs.
Depending on what is required, the Division is ready to provide services ranging from routine tasks to assuming total responsibility for content development and administration of a program. The goal in coordinating each special program is to deliver a comfortable, professional setting for the conference under university auspices, striving to provide an atmosphere whereby the participants are free to focus their attention upon obtaining the maximum benefit from their experience.
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B. Jeanne Fisher, B.A., M.A., Ph.D. .. Executive Director for University Advancement
James T. Simpson, B.S., M.B.A. ......... Dean, School of Primary Medical Care
George W. Comer, Jr., B.S., M.D. ...... Dean, School of Graduate Studies

Academic Administration

N. F. Audeh, B.S., M.S., Ph.D. .................. Dean, School of Graduate Studies
C. David Billings, B.S., Ph.D. ................. Dean, School of Administrative Science
Richard G. Griskey, B.S., M.S., Ph.D. ........ Dean, School of Engineering
Roy L. Meek, B.A., M.A., Ph.D. .............. Dean, School of Arts, Humanities and Social Sciences
Joyce K. Shoemaker, B.S.N., M.S.N., Ed.D. .. Dean, School of Nursing
Harold J. Wilson, B.S., M.S., Ph.D. .......... Dean, School of Science

James B. Gibson, B.S., M.S. ...................... Director, Financial Aid
Nan G. Hall, B.S., M.A.S. ...................... Director, Admissions and Records; Registrar
C. Michael Oliver, B.S., M.S., Ed.D. ........ Director, Continuing Education
George E. Tunnmeyer, B.S., M.B.A., Major General USA (Ret.) Director, Cooperative Education
Carolyn W. White, A.B., M.A., Ph.D. .... Director, Academic Advisement and Information Center
Delmus E. Williams, B.A., M.S.L.S., Ph.D. Director, Library
VON BRAUN POST-DOCTORAL FELLOWSHIP

The von Braun Post-Doctoral Fellowship was established in 1980 in memory of Dr. Wernher von Braun, a pioneer of space flight and an enthusiastic believer in every kind of scientific exploration. In 1961, Dr. von Braun persuaded the Alabama legislature to appropriate $3 million for the Research Institute on the UAH campus. With the von Braun Fellowship Program, UAH has set a living memorial to his quest for knowledge, his spirit of scientific adventure, and his drive for superior accomplishments. A von Braun Fellow receives an initial two-year appointment in a tenure track professorship, and he is expected to conduct research, to advise graduate students, and to actively pursue external support for research. Recipients of the von Braun Fellowships have been as follows:

1981 - 1982 Dr. Gordon A. Emslie, Space Physics, Department of Physics
1982 - 1983 Dr. Boon Loo, Materials Science, Department of Chemistry
1984 - 1985 Dr. John Stensby, Engineering, Department of Electrical and Computer Engineering.
Faculty

(Date refers to original appointment to the university; asterisk designates Graduate Faculty.)

ABBOTT, LYNNE C., B.A. (Sangamon State University), M.S.S.W. (University of Tennessee), D.W.S. (University of Alabama, Tuscaloosa). Assistant Professor of Psychiatry, 1976.

ABUSLAGUR, MUSTAFA, M.S., Ph.D. (California Institute of Technology). Visiting Assistant Professor of Electrical and Computer 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.


AMIN, ASHOK T., B.S., M.S.E. (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). Vice President for Academic Affairs and 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). Director of Undergraduate Program and Associate Professor of Nursing, 1972.

ARENDALE, WILLIAM F., B.S. (Middle Tennessee State University), M.S., Ph.D. (University of Tennessee). Professor of Chemistry, 1964.*


AUDEH, NADEEM F., B.S. (South Dakota State College), M.S., Ph.D. (Iowa State University). Dean of School of Graduate Studies and Professor of Electrical and Computer Engineering, 1964.*

BAIRD, JAMES K., B.S. (Yale University), M.A., Ph.D. (Harvard University). Chairman of Department of Chemistry and Professor of Chemistry, 1982.*

BANAHAN, BENJAMIN F., JR., M.D. (Tulane University School of Medicine). Associate Professor of Family Medicine, 1979.

BANTON, H. STAN, B.S., M.S. (Auburn University), Ph.D. (Georgia State University). Associate Professor of Finance, 1983.*

BARR, THOMAS A., B.S. (University of Chattanooga), M.S., Ph.D. (Vanderbilt University). Research Professor of Physics, 1982.*

BARTELL, FREDERICK O., A.B. (University of California), M.S., Ph.D. (University of Arizona). Associate Professor of Physics, 1983.*

BELL, NORMA, B.S. (University of Kansas), M.A. (George Peabody College). Adjunct Assistant Professor of Developmental Learning, 1980.

BENEDICT, SUSAN B., B.S.N. (Villa Maria College, Erie, PA), M.S.N. (University of Alabama, Huntsville), D.S.N. (University of Alabama, Birmingham). Assistant Professor of Nursing, 1984.

BILLINGS, C. DAVID, B.S. (Southwest Missouri State University), Ph.D. (University of Missouri at Columbia). Dean of the School of Administrative Science and Professor of Finance, 1981.*

BOND, MARGARET S., L.L.B. (University of Poitiers, France), Ph.D., S.J.D. (University of Paris, France). Director of Economics and Finance, Professor of Economics, 1964.*

BOUCHER, PHILIP P., B.A. (University of Hartford), M.A., Ph.D. (University of Connecticut). Associate Professor of History, 1974.*

BOWER, MARK V., B.S.E., M.S.E., Ph.D. (University of Michigan). 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). Chairman of Music Department and Professor of Music, 1966.

BRAINERD, JEROME J., B.S., M.S., (University of Notre Dame), Ph.D. (Cornell University), P.E. Associate Professor of Mechanical Engineering, 1965.*


BROWN, JESSE C., B.A., M.A. (Jacksonville State University), Ph.D. (Southern Illinois University). Assistant Professor of Political Science, 1981.*

BROWN, ROBERT A., B.S. (U.S. Naval Academy), M.S., Ph.D. (Ohio State University), P.E. Professor of Industrial and Systems Engineering, 1967.*

BRYSON, ROSCOE E., JR., B.B.A. (Memphis State University), M.B.A., Ph.D. (Georgia State University). Director of Accounting and Business Legal Studies and Associate Professor of Accounting, 1976.*


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). Director of Graduate Program and Professor of Nursing, 1980.*

BUSBIN, JAMES W., B.S., M.S. (University of Alabama, Tuscaloosa), Ph.D. (University of Tennessee, Knoxville). Assistant Professor of Marketing, 1983.*

BUTTS, TED M., B.S. (Mississippi State University), M.A., Ph.D. (University of Alabama, Tuscaloosa). Chairman of Education and Developmental Learning Department and Assistant Professor of Education, 1968.

CAMPBELL, P. SAMUEL, B.S. (Marietta College), M.S. (Ohio University), Ph.D. (Purdue University). Associate Professor of Biological Sciences, 1973.*


CASH, JANE E., B.S.N., M.S.N. (University of Alabama, Birmingham). Assistant Professor of Nursing, 1979.

CASTELLANO, BRUNO MICHAEL, B.S. (University of South Florida), Ph.D. (Tulane University). Assistant Professor of Mathematics and Statistics, 1981.*

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 Mathematics and Statistics, 1974.*

CHUNG, T.J., Engineering Diploma (Seoul National University), M.S., Ph.D. (Oklahoma State University). Professor of Mechanical Engineering, 1970.*

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 of Psychology, 1966.

COGLEY, ALLEN C., B.S.A.E. (Iowa State University), M.S.A.E. (University of Virginia), Ph.D., (Stanford University). Chairman and Professor of Mechanical Engineering, 1983*.

COLCLOUGH, GLENNNA, B.A., M.A. (Kent State University), Ph.D. (University of Georgia). Assistant Professor of Sociology, 1984.

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 Professor of Mathematics and Statistics, 1967.*


CORNEL, GEORGE W. JR., B.A. (University of Rochester), M.D., (John Hopkins University School of Medicine). Dean of the School of Primary Medical Care; Professor of Obstetrics and Gynecology; Associate Dean of The University of Alabama School of Medicine and Director of Medical Affairs at Huntsville, 1978.

CRABB, PAUL R., M.M. (Wichita State University), Ph.D. (Florida State University). Assistant Professor of Music, 1983.


CRUMP, WILLIAM J., B.S. (University of Georgia), M.D. (Vanderbilt University School of Medicine). Assistant Professor of Family Medicine, 1983.

CURRY, JAMES E., B.S., M.S. (Georgia Tech.), Ph.D. (University of Alabama, Tuscaloosa). P.E. Associate Professor of Chemical Engineering, 1981.*

DAVIS, JACK H., B.S., M.S., Ph.D. (Clemson University). Associate Professor of Physics, 1966.*

DAVIS, PATRICIA E., B.A. (Baylor University), M.A., Ph.D. (Emory University). Assistant Professor of English, 1980.


DILLARD, NANCY E., 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.*
DIPLACIDO, JOHN A., B.S. (Spring Hill College, Mobile), M.D. (University of Alabama School of Medicine). Chief of Obstetrics and Gynecologic Programs and Associate Professor of Obstetrics and Gynecology, 1978.


DUNAR, ANDREW J., B.A. (Northwestern University), M.A. (University of California, Los Angeles), Ph.D. (University of Southern California). Assistant Professor of History, 1984.

ELEY, MICHAEL H., B.A. (West Georgia College), M.S., Ph.D. (University of Georgia). Associate Professor of Biological Sciences, 1974.*

ELMORE, ROBERT C., B.S. (Indiana Central University), M.S. (Indiana University), M.B.A. (Indiana State University). Assistant Professor of Accounting, 1983.*

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). 1984 National Science Foundation Presidential Young Investigator Award recipient and Associate Professor of Physics, 1981.*


FINLEY, NANCY, J., B.A., M.A., Ph.D. (University of Oklahoma). Assistant 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.*

FORTE, ALDO, D.Sc. (University of Havana, Cuba). Associate Professor of Mathematics and Statistics, 1966.*


FRANCO-BROWDER, SALVADOR, B.S. (University of Mexico), M.D. (National Medical School, National University of Mexico). Associate Professor of Internal Medicine, 1977.

FRIERSON, WALLACE B., B.S. (Tennessee Technological University), M.D. (University of Tennessee College of Medicine). Interim Chief of Family Medicine Programs, Associate Professor of Family Medicine, and Acting Director of Family Practice Residency, 1983.


GARBER, JEFFREY G., B.A. (Vanderbilt University), M.D. (University of Louisville), Assistant Professor of Family Medicine, 1984.

GARSTKA, WILLIAM R., B.A. (University of California), Ph.D. (Harvard University). Assistant Professor of Biological Sciences, 1982.*


GOSS, ERNST P., B.A. (University of South Florida), M.B.A. (Georgia State University), Ph.D. (University of Tennessee, Knoxville). Assistant Professor of Management Information Systems, 1983.*


GRAVES, BENJAMIN B., B.A. (University of Mississippi), M.B.A. (Harvard University), Ph.D. (Louisiana State University). University Professor of Business Administration, 1970.*


GREENE, MICHAEL E., B.E.E., M.S. (Ohio State University), Ph.D. (Rice University). Assistant Professor of Electrical and Computer Engineering, 1982.


GRISKEY, RICHARD G., B.S., M.S., Ph.D. (Carnegie-Mellon University), P.E. Dean of School of Engineering and Professor of Chemical Engineering, 1982.*

GRISSET, GLORIA T., R.N. (Presbyterian Hospital School of Nursing, Philadelphia), B.S.N. (University of Pennsylvania), M.S.N. (University of Alabama, Birmingham). Assistant Professor of Nursing, 1980.

GROHSE, EDWARD W., B.Ch.E., M.Ch.E. (Cooper Union Institute of Technology), Ph.D. (University of Delaware). Professor Emeritus, 1960.

GUPTA, ASHOK, B. Tech. in EE (Indian Institute of Technology), M.S. (Tufts University), Ph.D. (University of Wisconsin). Visiting Assistant Professor of Electrical and Computer Engineering, 1983.


HARALICK, JOY G., A.A. (Montgomery Junior College), A.B., M.A. (George Washington University), Ph.D. (University of North Carolina). Associate Professor of Sociology and Adjunct Associate Professor of Developmental Learning, 1978.


HARTIG, MARGARET T., B.S.N. (University of Kansas Medical Center), M.S. (University of Tennessee Center for the Health Sciences). Assistant Professor of Nursing, 1984.


HAYS, DANIEL, B.A., M.A., Ph.D. (University of Missouri). Associate Professor of Psychology, 1973.*

HAZLETT, MICHAEL H., B.S., M.A. (West Texas State University), Ph.D. (Sam Houston State University). Assistant Professor of Criminal Justice, 1984.

HEAMAN, DORIS, R.N. (Deaconess Hospital, Missouri School of Nursing), B.S.N. (University of Alabama, Huntsville), M.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.

HENDRICKS, JOHN B., B.S. (University of Alabama, Tuscaloosa), M.S. (Southern Methodist University), Ph.D. (Rice University). Research Professor of Physics, 1973.*

HENZE, REET L., B.S.N. (Gustavus Adolphus College), M.S.N. (University of Colorado). Associate Professor of Nursing, 1973.

HERMANN, RUDOLF Ph.D. (Leipzig University), Dr. Phil habil. (Aachen Institute of Technology, Germany). Professor Emeritus, 1962.

HINCKER, ETTA ANNE, B.S. (St. Xavier College), M.S.N.E. (Catholic University of America), Ed.D. (Memphis State University). Professor of Nursing, 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 at Carbondale). Associate Professor of Electrical and Computer Engineering, 1980.*

HODGES, H. EUGENE, A.B., M.A. (University of Georgia), Ph.D. (University of Minnesota). Associate Professor of Sociology, 1975.

HOLDER, PAMELA G., B.S.N., M.S.N. (University of Alabama, Birmingham). Assistant Professor of Nursing, 1980.

HOLDSAMBECK, H. KIRK, B.S. (University of Utah), B.S. (Auburn University), M.D. (University of Florida College of Medicine). Clinical Instructor in Family Medicine, 1984.

HOOPER, JAMES W., B.S. (Florence State University), M.S. (Auburn University), M.S. (University of Missouri), Ph.D. (University of Alabama, Birmingham). Associate Professor of Computer Science, 1980.*


HOPKINS, JOHN B., A.B., M.A. (University of California, Davis), Ph.D. (George Peabody College). Associate Professor of Family Medicine, 1980.

HOPKINS, SHARON, B.A. (University of Tennessee), M.D. (University of Tennessee College of Medicine). Clinical Assistant Professor of Family Medicine, 1982.

HORWITZ, JAMES L., B.A., M.S., C.Phil., Ph.D. (University of California, San Diego). Associate Professor of Physics, 1981.*


HULL, HENRY LANE, A.B., M.A., Ph.D. (Georgetown University). Associate Professor of History, 1971.*


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.*

JOHANNES, JAMES D., B.S. (Arizona State University), M.S. (University of Alabama, Huntsville), Ph.D. (Vanderbilt University). Professor of Computer Science, 1974.*

JOHNSON, CARROLL D., B.S., M.S. (University of Tennessee), Ph.D. (Purdue University). Professor of Electrical and Computer Engineering, 1963.*


JONES, CLYDE S., B.S. (Tennessee Tech University), M.S. (Massachusetts Institute of Technology). Instructor in Electrical and Computer Engineering, 1983.

KANE, WILLIAM F., B.S. (James Madison University), M.S., Ph.D., (Virginia Polytechnic Institute and State University), Assistant Professor of Civil Engineering, 1983.*


KENDRICK, AUBREY WAYNE, B.A. (Georgia Southern College), M.S.L.S., M.B.A. (Florida State University). Assistant Professor of Bibliography, 1985.

KHEIR, NAIM A., B.S.E.E. (Ain-Shams University, Cairo, Egypt), Ph.D. (Hungarian Academy of Science.) Professor of Electrical and Computer Engineering, 1969.*


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KILGO, REESE D., B.A. (University of Alabama, University), M.Ed. (University of Florida), Ph.D. (University of Texas). Associate Professor of Education, 1966.*

KIRKPATRICK, SUE W., B.Sc., M.Sc., Ph.D. (Ohio State University). Associate Professor of Human Development, 1972.


KNIGHT, PATRICE, B.S. (Auburn University), M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Pediatrics, 1983.

KRISHNA, KOTTEKAI, B.S. (St. Aloysius College, India), M.S. (University of Mysore, India), Ph.D. (University of Pittsburgh). Assistant Professor of Mathematics and Statistics, 1983.*


KROMM, JANE E., B.S. (Wheelock College), M.Div. (Harvard Divinity School), Ph.D. (Emory University). Assistant Professor of Art, 1983.


LAWTON, ROBERT O., B.S. (Duke University) Ph.D. (University of Chicago). Assistant Professor of Biological Sciences, 1980.


LEWIS, GLADIUS, B.S. (University of London), M.S. (Council for National Academic Awards), Ph.D. (University of Nottingham), Visiting Assistant Professor of Mechanical Engineering, 1983.*

LINDBECK, RUDOLPH S., B.S.C., M.A. (University of North Dakota), Ph.D. (University of Alabama, Tuscaloosa), C.P.A. Professor of Accounting, 1984.*

LIU, FRANK C., B.S.M.E. (National Chekiang University), M.S.M.E. (University of Washington), Ph.D. (University of Texas). Professor of Mechanical Engineering, 1967.*

LLOYD, MARY A., R.N. (University of Tennessee), B.S.N., M.Ed. (University of Florida). Associate Professor of Nursing, 1972.

LOO, BOON, B.S., M.S. (University of Wellington, New Zealand), M.A., Ph.D. (University of Illinois at Chicago). Associate Professor of Chemistry, 1982.

LOVETT, JOHN N., JR., B.A. (Hendrix College), M.S.O.R., Ph.D. (University of Arkansas), P.E. Associate Professor of Industrial and Systems Engineering, 1984.*

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.


MARR, JAMES D., B.E.E., M.S.E.E., Ph.D. (Georgia Tech University). Assistant Professor of Electrical and Computer Engineering, 1980.*


MC CALISTER, DONALD B., A.B. (Fresno State College), Ph.D. (University of Tennessee). Director of Medical Student Affairs and Professor of Medical Sociology, 1972.

MC COLLUM, JAMES K., B.S. (U. S. Military Academy, West Point), M.A. (University of Dayton), M.P.A. (University of Cincinnati), Ph.D. (Virginia Polytechnic Institute and State University). Associate Professor of Management, 1984.*

MC KENNEY, WILLIAM A., A.B. (Duke University), M.S. (Clemson University). Assistant Professor of Management Science, 1984.*

MC KNIGHT, WILLIAM B., B.S. (Purdue University), Ph.D. (Virginia Polytechnic Institute and State University). Associate Professor of Management, 1984.*


MEEHAN, EDWARD J., JR., B.S. (Birmingham Southern College), Ph.D. (University of Alabama, Birmingham). Associate Professor of Chemistry and Adjunct Assistant Professor of Biological Sciences, 1978.*

MEEK, ROY L., B.A., M.A. (University of Oklahoma), Ph.D. (University of Oregon). Dean of School of Arts, Humanities, and Social Sciences and Professor of Political Science, 1981.

MODLIN, RICHARD F., B.S., M.S., M.S. (University of Wisconsin, Milwaukee), Ph.D. (University of Connecticut). Associate Professor of Biological Sciences, 1976.*

MOHADJER, MAHMOUD, M.S.E.E. (University of Tehran), M.S. (University of Manchester), Ph.D., (University of Alabama, Huntsville), Assistant Professor of Electrical and Computer Engineering, 1982.

MONTGOMERY, JOHN R., B.S. (Emory University), M.D. (Medical College of Alabama). Chief of Pediatric Programs, Professor of Pediatrics, and Adjunct Professor of Immunology, 1975.

MOORE, BOBBY G., B.S., M.S., (Mississippi State University), Ph.D. (Auburn University). Associate Dean for Administration of School of Primary Medical Care, Associate Professor of Microbiology, Adjunct Associate Professor of Biological Sciences, Assistant Dean of the University of Alabama School of Medicine, 1979.


MORALES, CLAUDIO, B.A., (University of Chile), M.S., Ph.D. (University of Iowa). Assistant Professor of Mathematics and Statistics, 1982.*

MORIARITY, DEBRA M., B.S. (Pennsylvania State University), Ph.D. (Temple University School of Medicine). Assistant Professor of Biological Sciences, 1984.*

MUNSON, WILLIAM F., B.A. (Oberlin College), M.A., Ph.D. (Yale University). Associate Professor of English, 1974.*


NORMAN, ROSE L., B.A. (Judson College), M.A. (University of Alabama, Tuscaloosa), Ph.D. (University of Tennessee). Assistant Professor of Nursing, 1979.

OAKLEY, LEAH, B.S.N. (University of Alabama, Huntsville), M.S.N. (University of Alabama, Birmingham). Assistant Professor of Nursing, 1979.


OLSEN, RICHARD C., B.S. (University of Southern California), M.S., Ph.D. (University of California, San Diego). Assistant Professor of Physics, 1982.

O'NEAL, ROBERT D., A.B. (Florida State University), M.A. (University of New Mexico), Ph.D. (Florida State University). Assistant Professor Emeritus, 1967.

PACIESAS, WILLIAM S., B.S. (Seton Hall University), M.S., Ph.D. (University of California, San Diego). Assistant Research Professor, 1982.


PAUL, CHRIS W., II, B.S. (Southwest Missouri State University), Ph.D. (Texas A&M University). Associate Professor of Economics, 1982.*

PEARSON, BONNIE C., R.N. (St. Joseph's Hospital School of Nursing), B.S., M.Ed. (University of Minnesota). Associate Professor of Nursing, 1974.

PENOT, DOMINIQUE M., B.A. (University of Aix-France), License (University of Montpellier), Ph.D. (Yale University). Professor of Romance Languages, 1970.


PERRIN, MARJORIE M., B.S.N. (Medical College of Virginia), M.S.N. (University of Alabama, Birmingham). Ed.D. (Peabody College of Vanderbilt University). Associate Professor of Nursing, 1973.*

PHILLIPS, MARGARET N., R.N. (Middletown Hospital School of Nursing), B.A. (University of Alabama, Huntsville), M.S.N. (University of Alabama, Birmingham). Associate Professor of Nursing, 1973.


POLGE, ROBERT J., Ingenieur E.S.E. (Ecole Superieure d'Electricite de Paris, France), M.S.E.E., Ph.D. (Carnegie Institute of Technology). Chairman and Professor of Electrical and Computer Engineering, 1963.*


POPE, RICHARD C., B.A., M.A. (University of Louisville). Associate Professor of Art, 1966.

PRASTHOFER, WILLIBALD, B.S. (State College Graz/Austria), M.S. (University of Alabama, Huntsville). Assistant Professor of Mechanical Engineering, 1981.

PRINCE, MARY E., B.A. (Vanderbilt University), M.S., Ph.D. (University of Alabama, Huntsville). Assistant Professor of Computer Science, 1983.

RANDALL, JOHN W., JR., B.A. (Mercer University), M.A. (Emory University), Ph.D. (University of Georgia). Assistant Professor of Political Science, 1981.

RANGANATH, HEGGEB S., B.S.E. (Bangalore University, India), M.S. (University of Louisville), M.S.E. (Birla Institute of Technology and Science), Ph.D. (Auburn University). Assistant Professor of Computer Science, 1982.*


REUMANN, MARY JANE, R.N. (Presbyterian Hospital, Pittsburgh), B.S.N., M.S.N. (University of Alabama, Huntsville). Assistant Professor of Nursing, 1980.

ROACH, CAROL A., B.A. (McNeese State College), M.A. (Texas Women's University), M.A. (University of Alabama, Tuscaloosa), Ph.D. (North Texas State University). Assistant Professor of Communications Arts, 1967.

ROACH, MERLE D., B.S. (Livingston State College), M.S. (North Texas State College), Ph.D. (University of Alabama, Tuscaloosa). Associate Professor of Mathematics and Statistics, 1966.*


ROCHOWIAK, DANIEL M ., B.S. (St. Bonaventure University), M.A., Ph.D. (University of Notre Dame). Assistant Professor of Philosophy, 1984.

ROGERS, JON G., A.B. (Kansas State Teachers College), M.A. (University of Arkansas), Ph.D. (University of New Mexico). Professor of Psychology, 1968.*

RUMFORD, CHARLES L., B.A. (Maryville College), M.A.S. (University of Alabama, Huntsville). School of Administrative Science Graduate Programs Coordinator and Instructor in Management, 1981.

RUTZLER, WILLI, Diplom (ETH Zurich), M.S. (University of California, Santa Barbara), Ph.D. (University of Minnesota). Assistant Professor of Chemical Engineering, 1983.*


SCHOENING, NILES C., A.B. (Columbia University), M.C.P. (Ohio State University), Ph.D. (University of Tennessee). Director of the Center for High Technology Management and Economic Research and Assistant Professor of Economics, 1983.*

SCHROEDER, EDWARD A., IV, B.S. (California Institute of Technology), Ph.D. (University of California, Los Angeles). Assistant Professor of Economics, 1982.*

SEARCY, MARTHA C., B.S. (New York University), M.A. (University of New Orleans), Ph.D. (Tulane University). Assistant Professor of History, 1983.

SETZER, WILLIAM N., B.S. (Harvey Mudd College), Ph.D. (University of Arizona, Tucson). Assistant Professor of Chemistry, 1984.


SHERMAN, J. DANIEL, B.S. (University of Iowa), M.A. (Yale University), Ph.D. (University of Alabama, Tuscaloosa). Director of Management and Marketing and Assistant Professor of Management, 1981.*


SHIH, CORNELIUS C., B.S. (National Taiwan University), M.S., Ph.D. (Michigan State University), P.E. Professor of Mechanical Engineering, 1965.*

SHIVA, SAJJAN G., B.E. (Bangalore University, India), M.S.E.E., Ph.D. (Auburn University). Chairman of Computer Science Department and Professor of Computer Science, 1978.*

SHOEMAKER, JOYCE K., B.S.N., M.S.N. (University of Pennsylvania), Ed.D. (Columbia University). Dean of School of Nursing and Professor of Nursing, 1984.

SIEGRIEST, KYLE T., B.S., M.S., Ph.D. (Georgia Institute of Technology). Assistant Professor of Mathematics and Statistics, 1980.*

SLATER, PETER JOHN, B.S. (Iona College), M.S., Ph.D. (University of Iowa). Associate Professor of Mathematics and Statistics, 1981.*

SMALLEY, LARRY L., B.S., M.S., Ph.D. (University of Nebraska). Professor of Physics, 1967.*

SMITH, JAMES E. JR., B.S., Ph.D. (University of South Carolina). Assistant Professor of Chemical Engineering, 1982.*

SPARKS, J. ELLIS, M.D. (Medical College of Alabama). Chief of Internal Medicine Programs and Professor of Internal Medicine, 1974.


STAFFORD, EDWARD F., B.S.I.E., M.S.I.E., Ph.D. (Pennsylvania State University). Director of the Alabama High Technology Assistance Center and Associate Professor of Management Science, 1984.*

STENSBY, JOHN, B.S. (University of Alabama, Tuscaloosa), M.S. (University of Alabama, Huntsville), Ph.D. (Texas A&M University). 1984 vonBraun Fellow and Assistant Professor of Electrical and Computer Engineering, 1984.

STROMECKY, OSTAP, M.A. (Vanderbilt University), Ph.D. (University Libera Ucrainensis, Pragensis). Assistant Professor of Slavic Languages, 1967.

SULLINS, WALTER R., A.B. (Stetson University), B.D. (Southern Baptist Seminar), M.A., Ph.D. (Emory University). Chairman of Psychology Department, Acting Chairman of Sociology Department, and Associate Professor of Psychology, 1966.

SUNG, CHI-CHING, B.A. (National Taiwan University), Ph.D. (University of California, Berkeley). Professor of Physics, 1972.*
TAN, KAI JIAW, B.C. (Taiwan National Chengchi University), M.A., M.A. (University of Alabama, Tuscaloosa), Assistant Professor of Finance, 1984.

TARTER, DONALD E. B.S. (Middle Tennessee State College), Ph.D. (University of Tennessee). Associate Professor of Sociology, 1966.

THOMPSON, KENNETH O., B.S., B.A.E., B.B.A., M.S. (University of Minnesota), Ph.D. (University of Alabama, Tuscaloosa). Assistant Dean of Engineering, Director of Institutional Support Services, and Associate Professor of Mechanical Engineering, 1969.


TORR, DOUGLAS G., B.Sc., Ph.D. (Rhodes University, South Africa). Professor of Physics, 1985.


TRAYNOR, MARY E., B.A. (Albertus Magnus College), M.D. (University of Illinois College of Medicine). Chief of Psychiatry Programs and Associate Professor of Psychiatry, 1983.

TSENG, FAN TSONG, B.S. (National Chaio Tung University), M.S., Ph.D. (University of Texas, Dallas). Assistant Professor of Management Information Systems and Management Science, 1984.*


VOZIKIS, GEORGE S., B.A. (University of Athens-Greece), M.B.A. (Virginia Commonwealth University), Ph.D. (University of Georgia). Director of the Small Business Development Center and Associate Professor of Management, 1985.*

WAAGEN, CHRISTOPHER L., B.A. (State University of New York, Albany), M.A., Ph.D., (Pennsylvania State University), Assistant Professor of Communication Arts, 1982.

WALKER, JACK R., B.S. (Mississippi State University), M.S. (Georgia Institute of Technology), Ph.D. (Oklahoma State University), P.E. Associate Professor of Industrial and Systems Engineering, 1982.*

WALLACE, DONALD B., B.S., M.S., Ph.D. (University of Wisconsin) P.E. Associate Professor of Mechanical Engineering, 1974.*

WARREN, IRIS, R.N. (Georgia Baptist Hospital School of Nursing), B.S.N. (Louisiana State University), M.S.N. (University of Alabama, Birmingham). Associate Professor of Nursing, 1973.


WELSTEAD, STEPHEN T., B.S. (Notre Dame), M.S. (SUNY, Stony Brook), Ph.D. (Purdue University). Assistant Professor of Mathematics and Statistics, 1982.*
WHARRY, RHODA E., B.S.E. (University of Arkansas), M.S. (Memphis State University), Ph.D. (Purdue University). Professor of Education, 1967.*


WHITTEN, ALAN F., B.A., M.Ed. (Harding College), C.P.A. Instructor in Accounting, 1981.

WILLIAMS, LEE E., II, B.A. (Knoxville College), M.A. (East Tennessee State University), Ph.D. (Mississippi State University), Associate Professor of History, 1972.*

WILLIAMS, THOMAS J., B.S.Ed., M.Ed., Ph.D. (University of Georgia). Chairman of Political Science and Criminal Justice Department, Associate Professor of Political Science, 1980.*

WILLIAMSON, JOAN, R.N. (Birmingham Baptist Hospital), B.S.N. (University of Alabama, University), M.S.N. (University of Alabama, Birmingham). Associate Professor of Nursing, 1973.

WILSON, HAROLD J., B.S. (Alabama A&M University), M.S. (Iowa State University), Ph.D. (University of Arizona). Dean of the School of Science and Professor of Biological Sciences, 1972.*


WU, MAW-KUEN, B.A., M.S. (Tamkang College of Arts and Sciences), Ph.D. (University of Houston). Assistant Professor of Physics, 1984.*


WU, SHI TSAN, B.S. (National Taiwan University), M.S. (Illinois Institute of Technology), Ph.D. (University of Colorado). Professor of Mechanical Engineering and Adjunct Professor of Physics, 1967.*

WYSKIDA, RICHARD M., B.S.E.E. (Tri-State College), M.S.I.E. (University of Alabama, University), Ph.D. (Oklahoma State University) P.E. Professor of Industrial and Systems Engineering, 1968.*

ZAHORCHAK, ROBERT J., B.S., M.S., Ph.D. (Michigan State University). Assistant Professor of Biological Sciences, 1983.

Lecturers

ACCARDI, JAMES R., B.S. (University of North Alabama), J.D. (University of Alabama School of Law). Adjunct Assistant Professor of Criminal Justice, 1979.


ALTGILBERS, LARRY L., B.S. (Northeast Missouri State University), M.S. (University of Alabama, Huntsville). Assistant Professor of Chemistry, 1982.


AYERS, ORVAL E., B.A. (Berea College, Kentucky), M.S. (Auburn University), Ph.D. (University of Alabama, Huntsville and University of Alabama, Tuscaloosa). Associate Professor of Chemistry, 1981.

BABCOCK, EDWARD STANLEY, JR., B.S. (U.S. Military Academy, West Point), M.A.S. (University of Alabama, Huntsville), Ph.D. (Baylor University), Assistant Professor of History and Philosophy 1984.


BELL, NORMA, B.S. (University of Kansas), M.A. (George Peabody College). Adjunct Instructor in Developmental Learning, 1980.

BENTLEY, JAMES H., B.S. (Florida State University), M.S. (University of Arizona), Instructor in Chemistry, 1982.

BERG, ERNESTINE H., B.S. (Western State University, Bowling Green), M.D. (University of Louisville School of Medicine). Clinical Associate Professor of Surgery — Anesthesiology, 1977.

BISHOP, JAMES, B.A. (University of Alabama, Huntsville). Adjunct Instructor in Art, 1984.

BILL, T.C., A.A. (College of San Mateo), A.B. (Occidental College), M.S. (Troy State University), Adjunct Instructor in Criminal Justice, 1982.

BISHOP, WILLIAM Y., B.S.E.E. (Auburn University), M.S.E., M.A.S. (University of Alabama, Huntsville), Lecturer in Electrical and Computer Engineering, 1978.


BOWDEN, CHARLES M., B.S. (University of Richmond), M.S. (University of Virginia), Ph.D. (Clemson University). Professor in Physics, 1971.


BOYER, LYNN B., B.S. (University of Mississippi), M.D. (University of Mississippi School of Medicine). Clinical Assistant Professor of Internal Medicine - Neurology, 1979.
BRISCOE, GARY W., B.S. (University of Alabama), M.S.E. (University of Alabama, Tuscaloosa), Ph.D. (Vanderbilt University). Lecturer in Electrical and Computer Engineering, 1981.


BUCK, ROBERT L., B.S. (University of Alabama, Tuscaloosa), M.B.A. (Samford University), J.D. (Birmingham School of Law). Assistant Professor of Management, 1983.


BURK, KATHLEEN C., B.S. (University of Montevallo), M.A. University of Alabama, Huntsville. Instructor in Biological Sciences, 1982.


CATES, JOHN O., B.A. (University of Alabama, Tuscaloosa), J.D. (Cumberland School of Law, Samford University). Assistant Professor of Business Legal Studies, 1984.


CHANDLER, JAMES E., M.D. (University of Colorado Medical Center). Clinical Associate Professor of Internal Medicine, 1981.

CHARERNKAVANICH, DUSIT, B.S. (Prasornmitr College, Thailand), M.S. (National Institute of Development Administration, Thailand). Assistant Professor of Computer Science, 1981.


CLABOUGH, WEST A., B.S., M.S., M.D. (University of Oklahoma College of Medicine). Clinical Professor of Internal Medicine — Dermatology, 1974.


DANIEL, CHARLES C., B.S.I.E. (University of Alabama, Tuscaloosa), M.S. (University of Alabama, Huntsville), Ph.D. (Oklahoma State University). Associate Professor of Management Science, 1975.


DAVIES, BERVIL D., B.S.E. (University of Alabama, Tuscaloosa), M.P.A., Ph.D. (University of Oklahoma). Adjunct Associate Professor of Management, 1976.

DAVIS, CARL G., B.A.E. (Georgia Tech), M.S.A.E., M.S.M.H., Ph.D. (University of Alabama, Tuscaloosa). Adjunct Associate Professor of Computer Science, 1982.


DIXON, STANLEY T., B.S., M.S. (Wichita State University), Ph.D. (New Mexico State University). Associate Professor of Mathematics, 1982.


DORSETT, MICHAEL J., B.S. (University of Georgia), M.S.E., Ph.D. (University of Alabama, Huntsville). Adjunct Associate Professor of Industrial and Systems Engineering, 1980.

DOUTHIT, FLOYD, B.S. (Jacksonville State University), M.A. (University of Texas), Lecturer in H.P.E.R., 1980.


DUTHIE, J. GRAEME M., B.Sc. (University of Aberdeen), Ph.D. (Bristol University). Adjunct Professor of Physics, 1977.


EDISON, ROBERT L., B.S., M.S. (Tennessee Institute of Technology) Lecturer in Mechanical Engineering, 1979.

ESPY, PATRICK N., B.S. (University of Alabama, Tuscaloosa), M.S., Ph.D. (University of Arkansas). Associate Professor of Mathematics 1975.

ESSENWANGER, OSKAR, B.S. (Technical University, Danzig), Diploma in Meterology, (University of Vienna), Sc.D. (University of Wurzburg). Adjunct Professor of Environmental Science, 1971.


FALLIN, CARL E., B.S. (University of Alabama, Birmingham), C.P.A. Instructor in Accounting, 1984.
FENNELLY, ALPHONSUS J., B.A. (Manhattan College), M.A., Ph.D. (Yeshiva University). Adjunct Associate Professor of Physics, 1980.

FINZEL, PETER A., B.S. (Georgia Institute of Technology), M.S. (University of Tennessee, Knoxville). Lecturer in Industrial and Systems Engineering, 1983.

FISHMAN, GERALD J., B.S. (University of Missouri), M.S., Ph.D. (Rice University). Professor of Physics, 1978.

FOHRELL, FREDERICK L., B.S.B.A., J.D. (University of Alabama, Tuscaloosa). Adjunct Assistant Professor of Business Legal Studies, 1982.


FOWLER, BRUCE W., B.S. (University of Alabama, Tuscaloosa), M.S. (University of Illinois), Ph.D. (University of Alabama, Huntsville). Associate Professor of Physics, 1978.*


GIERA, JUAN B., B.A., J.D. (Tulane University). Assistant Professor of Procurement, 1972.

GIERE, ALBERT C., B.S. (University of Pittsburgh), M.S. (University of New Mexico), Ph.D. (Pennsylvania State University). Associate Professor of Physics, 1979.


GUINN, GERALD, B.S. (Auburn University), M.S. (Purdue University), Ph.D. (University of Alabama, Tuscaloosa). Adjunct Associate Professor of Mechanical Engineering, 1967.


HARDIN, DANNY, M., B.S. (Berry College), M.S. (University of Alabama, Huntsville). Instructor in Computer Science, 1982.


HARRISON, JOHN W., B.A. (University of Alabama, Huntsville), J.D. (University of Alabama, Tuscaloosa). Assistant Professor of Management, 1977.

HASSIN, GUIDO, B.S. (Arkansas State University), M.S., (University of California, Santa Barbara), Ph.D. (University of Minnesota). Adjunct Assistant Professor of Biophysics, 1983.

HAUS, JOSEPH W., JR., B.S., M.S. (John Carroll University), Ph.D. (Catholic University of America). Adjunct Associate Professor of Physics, 1984.

HAY, FRANK E., B.S.E.E. (Wayne State University, Michigan), M.S.E., Ph.D. (Arizona State University). Adjunct Associate Professor of Computer Science, 1982.


HICKS, JERRY LEE, B.A. (University of Alabama, Huntsville), J.D. (University of Alabama, Tuscaloosa). Adjunct Assistant Professor of Business Legal Studies, 1979.


HOWARD, TRUMAN W., III, B.S.M.E. (Southern Methodist University), M.I.E. (Texas A&M University), M.S.E. (University of Virginia). Lecturer in Industrial and Systems Engineering, 1982.


HUGHES, CUTTER, A.B. (Davidson College), J.D. (University of Virginia), LL.M. (University of London). Adjunct Assistant Professor of Communication Arts, 1978.

HULL, RICHARD P., M.D. (University of Mississippi School of Medicine). Clinical Assistant Professor of Internal Medicine - Neurology, 1979.


JOHNSTON, MARY HELEN, B.S., M.S. (Florida State University), Ph.D. (University of Florida). Lecturer in Mechanical Engineering, 1981.

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JONES, KAREN E., R.N. (Evanston Hospital, Illinois), B.S.N. (University of Illinois at the Medical Center), M.N. (Emory University). Director of Nursing, Ambulatory Care Center and Adjunct Assistant Professor of Nursing, 1980.


KEEBLER, DOROTHY LYNN, B.S. (Fairleigh Dickinson University), M.S. (Upstate Medical Center, New York). Lecturer in Pathology, 1976.


KOWALLIK, RICHARD L., B.S. (Purdue University), M.A.S. (University of Alabama, Huntsville). Instructor in Procurement, 1982.

KRAMER, RICHARD D., B.A.E. (Auburn University), M.S.E. (University of Alabama, Tuscaloosa), M.S.E., Ph.D., (University of Alabama, Huntsville). Assistant Professor of Management Science, 1982.

KROES, ROGER L., B.S., M.S. (Marquette University), Ph.D. (University of Missouri). Assistant Professor of Physics, 1980.*


LAUGHLIN, EDWARD H., B.A. (University of Virginia), M.D. (Duke University School of Medicine). Clinical Associate Professor of Surgery, 1974.

LAWLER, PATRICK B., B.S.I.E. (Mississippi State University), M.S.E. (Texas A&M University). Adjunct Assistant Professor of Industrial and Systems Engineering, 1974.


LINDSAY, TREVOR R., M.B., B.S. (University of the West Indies). Clinical Assistant Professor of Psychiatry, 1978.

LITKENHOUS, EDWARD E., JR., B.E., M.D. (Vanderbilt University). Chief of Pathology Programs and Clinical Associate Professor of Pathology, 1974.

LOLLAR, LOUIS F., B.S. (Auburn University), M.S.E. (University of Alabama, Huntsville). Lecturer in Electrical and Computer Engineering, 1983.
LOWE, MICHAEL J., B.S.E.E., M.S.E.E. (University of Idaho), Ph.D. (Montana State University). Adjunct Associate Professor of Industrial and Systems Engineering, 1974.

LUNDQUIST, CHARLES, B.S. (South Dakota State University), Ph.D. (University of Kansas). Adjunct Professor of Management, 1984.


MASSEY, THOMAS F., B.E.E. (Georgia Institute of Technology), M.S.E., Ph.D. (University of Alabama, Huntsville). Lecturer in Industrial and Systems Engineering, 1982.


MAULSBY, NELLIE B., B.S. (Jacksonville State University), M.S. (Auburn University), Ph.D. (Purdue University). Adjunct Assistant Professor of Biological Sciences, 1982.

MC CAULEY, PATRICK, B.A. (Tulane University), M.A. (Vanderbilt University). Adjunct Assistant Professor of Communications Arts, 1974.


MC KENZIE, LUSANNE, B.A. (Murray State University), M.D. (Vanderbilt University School of Medicine). Clinical Professor of Pediatrics, 1976.

MC KENZIE, THOMAS A., III, B.S. (Davidson College), M.D. (Vanderbilt University School of Medicine). Chief of Radiology Programs and Clinical Associate Professor of Radiology, 1977.

MC KERLEY, CHARLES W., B.S. (University of Alabama, Tuscaloosa), M.S.E. (University of Alabama, Huntsville). Lecturer in Electrical and Computer Engineering, 1981.

MC NIDER, RICHARD T., B.S. (University of Alabama, Tuscaloosa), M.S. (Florida State University), Ph.D. (University of Virginia). Adjunct Assistant Professor of Environmental Science, 1982.


MIKELL, LA MERLE S., B.S. (Auburn University). Adjunct Assistant Professor of Art, 1974.

MILBURGER, JOE F., B.A. (University of Texas). Adjunct Assistant Professor of Art. 1975.

MILLER, JAMES R., III, B.S. (Western Kentucky State College), M.S. (University of Alabama, Tuscaloosa). Assistant Professor of Physics, 1977.

MOHLERE, RICHARD D., B.S. (West Point), M.S. (Massachusetts Institute of Technology). Lecturer in Electrical and Computer Engineering, 1983.


MORGAN, GEORGE C., B.A. (Birmingham-Southern) M.D. (Louisiana State University at Shreveport). Clinical Assistant Professor of Internal Medicine, 1984.

MORGAN, NANCY C., B.S. (Jacksonville State University), M.A. (University of Alabama, Tuscaloosa.) Instructor in Mathematics, 1982.

MOSES, RAY, N., JR., B.S.A.E. (Georgia Institute of Technology), Ph.D. (Ohio State University). Associate Professor of Physics, 1984.


NAUMANN, ROBERT J., B.S., M.S., Ph.D. (University of Alabama, Tuscaloosa). Professor of Physics, 1975.


NUNES, ARTHUR, B.S.M.E., M.S.M.E. (Massachusetts Institute of Technology), Ph.D. (University of California, Berkeley), 1981.


OLIVER, C. MICHAEL, B.S., M.S. (East Texas State University), Ed.D. (University of Southern Mississippi). Director of Division of Continuing Education and Adjunct Assistant Professor of Education, 1977.

OLIVER, JAMES M., B.S., M.S. (Louisiana State University), Ph.D. (University of Colorado). Associate Professor in Mathematics, 1983.


PALMER, JAMES, B.A. (University of the South), M.A. (University of Alabama, Huntsville). Instructor in English, 1982.


PAPADOPOLOS, JAMES, G., B.S. (Massachusetts Institute of Technology), M.S. (Southern Methodist University). Lecturer in Mechanical Engineering, 1981.

PARKER, ROBERT R., B.S.E.E. (Mississippi State University), M.S.E., (Cornell University), Ph.D. (The University of Alabama, Huntsville), Adjunct Associate Professor of Computer Science, 1983.


PARRISH, DAVID, B.F.A. (University of Alabama, Tuscaloosa). Adjunct Assistant Professor of Art, 1980.

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PATTERSON, WILLIAM J., B.S., M.S. (Mississippi State University), Ph.D. (University of Alabama, Tuscaloosa). Assistant Professor of Chemistry, 1977.

PAYNE, WILLIAM W., JR., B.S. (North Carolina State University), M.S. (University of Virginia), Ph.D. (North Carolina State University). Lecturer in Mechanical Civil Engineering, 1982.

PETERS, PALMER N., B.S., Ph.D. (University of Tennessee). Professor of Physics, 1969.


PLEXICO, LARRY, B.S. (Auburn University), M.S., Ph.D. (University of Alabama, Huntsville). Lecturer in Mechanical Engineering, 1982.

PLOUSSARD, JOHN H., B.S., M.D. (St. Louis University). Clinical Associate Professor of Pediatrics, 1975.


POPE, DAVID J., B.S. (Auburn University), 1981.

POWELL, MICHAEL S., B.S. (Auburn University), M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Pediatrics, 1984.


RANDALL, JOSEPH L., B.S., M.S., Ph.D. (University of Alabama, Tuscaloosa). Associate Professor in Physics, 1960.

RAO, D. RAMKISHAN, B.V.SC. (A.P. Agricultural University, India), M.S., Ph.D. (Auburn University). Associate Professor of Biological Sciences, 1978.

REASONER, DAVID L., B.A., B.S.E.E., Ph.D. (Rice University). Associate Professor of Physics, 1985.

REGNER, JOHN L., B.S., M.S., Ph.D. (Ohio State University). Associate Professor of Physics, 1984.


RHEINFURTH, MARIO H., B.S., M.S. (University of Darmstadt, Germany). Lecturer in Mechanical Engineering, 1959.


RICE, HORACE W., B.A. (Alabama A&M University), J.D. (University of Toledo College of Law). Adjunct Assistant Professor of Political Science, 1976.


RINN, ROGER C., B.S., M.A. (Eastern New Mexico University), Ph.D. (Georgia State University). Clinical Associate Professor of Psychiatry, 1974.

ROBERTS, THOMAS G., A.A. (Armstrong College), B.S., M.S., (University of Georgia), Ph.D. (North Carolina State University). Associate Professor of Physics, 1980.

ROBERTSON, ANN H., B.S.N. (Berea College), M.S.N. (Emory University). Instructor in Nursing, 1984.

ROBESON, VERNON, B.S.M.E. (University of Nebraska), 1978.

ROBINSON, JENNESSEE B., B.S. (University of Utah), M.S., Ph.D. (Purdue University). Assistant Professor of Marketing, 1983.


SCHREEDER, MARSHALL T., B.I.E. (Georgia Institute of Technology), M.D., M.P.H. (Tulane University Medical School). Clinical Associate Professor of Internal Medicine, 1979.

SCHROER, BERNARD J., B.S. (Western Michigan University), M.S. (University of Alabama, Tuscaloosa), Ph.D. (Oklahoma State University). Adjunct Professor of Environmental Science, 1977.

SCHUMANN, J. PAUL, B.A., M.A. (University of Mississippi), Ph.D. (University of Oklahoma). Lecturer in Political Science, 1981.

SCHUTZENHOFER, LUKE, B.S.A.E., (St. Louis University), M.S.E. (University of Alabama, Huntsville), Ph.D., (University of Alabama, Tuscaloosa). Lecturer in Mechanical Engineering, 1972.


SELAH, CHARLES E., B.S. (University of Oklahoma), M.D. (Tulane University School of Medicine). Clinical Associate Professor and Chief of Surgery Programs, 1975.


SHEA, DANIEL E., B.S. (University of Alabama, Huntsville). Instructor in Biological Sciences, 1980.


SMITH, FREDERICK W., B.A. (Vanderbilt University), M.D. (Vanderbilt University School of Medicine). Clinical Associate Professor of Surgery, 1984.


SMOOT, HENRENE E., B.A. (Spelman College), M.S. (New York University), M.A. (University of Alabama, Huntsville), Ed.S. (University of Alabama, Tuscaloosa), D.Sc. (Southeastern Institute of Technology). Assistant Professor of Mathematics, 1972.


SOLLEY, MICHAEL W., B.S.E.E. (University of Alabama, Huntsville), Lecturer in Electrical and Computer Engineering, 1982.


STERN HENRY E., B.E. (Tulane University), Ph.D. (University of Alabama, Huntsville), Lecturer in Electrical and Computer Engineering, Industrial and Systems Engineering, and Mathematics, 1982.

STUTZLER, JOHN D., B.S. (Notre Dame), Ph.D. (MIT). Adjunct Professor of Physics, 1980.

STUHLINGER, ERNST, Ph.D. (Tubingen, Germany). Adjunct Professor of Physics and Environmental Science, 1976.

STERN HENRY E., B.E. (Tulane University), Ph.D. (University of Alabama, Huntsville), Lecturer in Electrical and Computer Engineering, Industrial and Systems Engineering, and Mathematics, 1982.

STEWART, ROBERT E., B.S., M.D. (University of Tennessee). Clinical Associate Professor of Pediatrics, 1975.


STONE, NOBIE H., B.S., M.S. (Florida State University), Ph.D. (University of Alabama, Huntsville), Adjunct Assistant Professor of Physics, 1980.


STUHLINGER, ERNST, Ph.D. (Tubingen, Germany). Adjunct Professor of Physics and Environmental Science, 1976.

SWANN, ALLIE C., B.S. (Mississippi State University), M.A.S. (University of Alabama in Huntsville). Adjunct Assistant Professor of Accounting, 1979.

SZOFERAN, FRANK R., B.S. (Washington University), Ph.D. (Brown University). Associate Professor of Physics, 1982.


TEMPLE, CRISTAL. B.A. (University of Alabama, Huntsville). Instructor in German, 1980.

TEOH, NIHAL S., B.S. (University of Istanbul), M.S. (University of Manitoba), M.S. (Clarkson College of Technology). Instructor in Mathematics, 1983.

THOMAS, DOYLE W., B.S. (Texas A&M University), M.S.E. (Purdue University), Ph.D. (University of Alabama, Huntsville). Lecturer in Electrical and Computer Engineering, 1983.

THOMPSON, KENNETH W., B.A. (Capital University), M.A. (University of South Florida). Adjunct Assistant Professor of Management Information Systems, 1984.

THROCKMORTON, DAVID W., B.S. (Ohio State University), M.S. (University of Alabama, Birmingham), M.D. (University of Alabama School of Medicine). Chief of Emergency Medicine Programs and Clinical Assistant Professor of Emergency Medicine, 1984.


UJJANI, BHARATHI B., B.S. (Bangalore University, India), M.S. (University of Wisconsin-Milwaukee). Instructor in Chemistry, 1983.

VENTRE, ANDREW J., B.M.E. (New York University), M.S.E., Ph.D. (University of Alabama, Huntsville), Lecturer in Electrical and Computer Engineering, 1981.

VIZZINI, SALVATORE, B.A. (Shaw University), M.B.A. (University of Miami). Adjunct Assistant Professor of Criminal Justice, 1980.

WALKER, BILLY JAY, B.S.M.E., M.S., Ph.D. (University of Oklahoma), 1969.

WALKER, CONRAD, B.S., M.S. (University of Tennessee). Assistant Professor of Economics, 1971.

WALKER, WALTER Y., B.A. (Vanderbilt University), M.D. (Medical College of Alabama), Clinical Associate Professor of Surgery, 1976.


WERKHEISER, ARTHUR H., JR., B.S. (Lafayette College), M.S., Ph.D. (University of Tennessee). Professor of Physics, 1969.

WHITE, LEWIS, Lecturer in Emergency Medical Technology/Paramedic Training, 1984.


WILLIAMS, ROBERT H., A.B. (Miami University, Ohio), M.D. (University of Alabama School of Medicine). Clinical Associate Professor of Internal Medicine, 1981.

WORKMAN, CAROL Y., B.S. (University of Rochester), M.S. (University of Alabama, Huntsville), Ph.D. (Southeastern Institute of Technology). Instructor in Chemistry in Environmental Science, 1982.


YOUNG, POH S., B.S. (National Chi-nan University), M.S. (Oklahoma State University), Ph.D. (University of California, Berkeley). Professor of Physics, 1982.

Volunteer Faculty

ABELE, HENRY B., B.S., M.D. (Medical College of Alabama). Psychiatry.

AKIN, T. JOE, M.D. (University of Tennessee College of Medicine). Surgery.

ALISON, W. EVANS, M.D. (Tulane University School of Medicine). Obstetrics and Gynecology.

ANDERSON, HENRY L., JR., B.S., M.D. (Tulane University School of Medicine). Internal Medicine.


ARRINGTON, THOMAS H., B.S., M.D. (Harvard Medical School). Internal Medicine.

BAIRD, ROBERT L., M.D. (Louisville State University School of Medicine). Clinical Assistant Professor of Surgery - Colon and Rectal Surgery.

BAKER, GRADY L., M.D. (University of Louisville School of Medicine). Family Medicine.

BELL, WILLIAM H., III, B.A., M.D. (University of Tennessee College of Medicine). Clinical Associate Professor of Surgery - Neurosurgery.

BESS, BARTLEY, Ph.D. (Texas Tech University). Psychiatry - Clinical Psychology.

BINGER, RICHARD, M.D. (University of Tennessee College of Medicine). Surgery.

BLACK, J. KENDALL, B.S., M.D. (Medical College of Alabama). Clinical Assistant Professor of Surgery - Orthopedics.

BLACKWELL, JACK, B.S., M.D. (Medical College of Alabama). Family Medicine.

BOGGESS, JOHN W., B.S., M.D. (University of Alabama School of Medicine). Family Medicine.

BOOHER, PETER C., B.A., M.D. (Emory University School of Medicine). Clinical Assistant Professor of Radiology.

BORDENCA, ANNA, B.A., M.D. (Medical College of Alabama). Clinical Assistant Professor of Pediatrics.

BRAMM, HORACE G., B.S., M.D. (University of Tennessee College of Medicine). Clinical Associate Professor of Obstetrics and Gynecology.


BROGDON, PAUL, M.D. (University of Arkansas College of Medicine). Clinical Assistant Professor of Family Medicine.


BROWN, MICHAEL W., B.S., M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Internal Medicine.

BROWN, RICHARD A., B.S., M.D. (Medical College of Georgia). Clinical Assistant Professor of Family Medicine.

BRYAN, ALBERT C., JR., B.A., B.S., M.D. (University of Tennessee College of Medicine). Obstetrics and Gynecology.

BURLISON, PAT E., B.S., M.D. (University of Tennessee College of Medicine). Surgery - Plastic Surgery.

BURNSIDE, RICHARD C., B.S., M.D. (University of Colorado School of Medicine). Clinical Assistant Professor of Surgery - Orthopedics.

BURSON, ROBERT A., B.S., M.D. (University of Tennessee College of Medicine). Clinical Assistant Professor of Internal Medicine.

BUTLER, CHARLES L., B.S., M.D. (Medical College of Alabama). Pathology.


CAMERON, WILLIAM B., M.D. (University of Tennessee College of Medicine). Clinical Associate Professor of Obstetrics and Gynecology.

CAMPBELL, JAMES E., M.D. (University of Tennessee College of Medicine). Radiology.

CAMPBELL, LINDA M., B.A., M.D. (University of Maryland School of Medicine). Clinical Instructor of Internal Medicine.

CARLISLE, BOB B., B.A., M.D. (Vanderbilt University School of Medicine). Surgery.

CARTER, WILLIAM W., M.D. (St. Louis University School of Medicine). Surgery - Urology.

CARUSO, P. MICHAEL, B.A., M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Internal Medicine.

CAUTHEN, FRANK M., B.S., M.D. (Medical College of Alabama). Clinical Assistant Professor of Family Medicine.

CERHA, VLADIMIR, M.D. (Charles University Medical School, Czechoslovakia). Clinical Instructor in Surgery-Anesthesiology.

CHRISTIAN, PAUL M., B.S., M.D. (Medical College of Alabama). Family Medicine.

CHRISTIAN, PHILLIP A., D.M.D. (University of Alabama School of Dentistry). Clinical Assistant Professor of Family Medicine - Dentistry.
CHRISTOPHER, NEIL E., B.S., M.D. (Medical College of Alabama). Family Medicine.


COTTER, CLEMENT P., M.D. (University of Texas Medical Branch at Galveston). Surgery.

COWART, NORTON E., B.S., M.D. (University of Illinois College of Medicine). Internal Medicine.

CROSBY, SID S., B.A., M.D. (University of Mississippi). Family Medicine

CROSS, J. TODD, M.D. (University of Tennessee College of Medicine). Family Medicine.

CROWSON, LAWRENCE, B., JR., M.D. (University of Tennessee College of Medicine). Obstetrics and Gynecology.

CUNNINGHAM, JAMES E., B.A., M.D. (University of Tennessee College of Medicine). Family Medicine - Internal Medicine.

DANIEL, HUNTER B., B.S., M.D. (University of Tennessee College of Medicine). Family Medicine.

DEMPSEY, WALKER, B.S., M.D. (Columbia University College of Physicians and Surgeons). Clinical Assistant Professor of Family Medicine.

DUNAGAN, DEASON C., B.S., M.D. (University of Tennessee College of Medicine). Surgery.


DYE, WILLIAM B., M.D. (Medical College of South Carolina). Family Medicine-Aerospace Medicine.

EICH, W. FOSTER, B.S., M.D. (Tulane University School of Medicine). Pediatrics.

ENGLISH, WILLIAM E., B.S., M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Family Medicine.

FABIANKE, RAYNARD G., B.A., M.D. (University of Texas Medical School at San Antonio). Clinical Assistant Professor of Family Medicine.


FAMBROUGH, RAY A., B.S., M.D. (University of Alabama School of Medicine). Clinical Instructor of Surgery - Orthopedics.


FIGAROLA, TULIO R., B.S., M.D. (University Medical School, Havana, Cuba). Clinical Assistant Professor of Family Medicine.

FINCH, RICHARD A., B.S., M.D. (Medical College of Alabama). Internal Medicine.

FITE, LARRY C., B.S., M.D. (University of Alabama School of Medicine). Family Medicine.


FRIERSON, PATRICIA, B.S., M.D. (University of Alabama School of Medicine). Clinical Instructor of Family Medicine.

FURR, STEVEN P., B.S., M.D. (University of South Alabama). Family Medicine.

GAY, OTIS F., M.D. (Tulane University of Medicine). Family Medicine - Public Health.


GRAY, EDWIN R., B.S., M.S., M.D. (Medical College of Alabama). Clinical Assistant Professor of Family Medicine.
GREEN, EDWARD W., B.A., B.S., M.D. (University of Minnesota). Clinical Assistant Professor of Pediatrics.

GRIFFITH, R. PARKER, B.S., M.D. (Louisiana State University School of Medicine). Radiology - Radiation Oncology.

GRIFFITH, THOMAS, M.D. (Louisiana State University of Medicine). Surgery-Urology.

GRIGGS, THOMAS, M., B.A., M.D. (University of Virginia School of Medicine). Surgery-Otolaryngology.

GROTE, CARL A., JR., A.B., M.D. (Vanderbilt University School of Medicine). Family Medicine.

GRUNDY, WALTER G., B.S., M.D. (University of Oklahoma). Clinical Instructor in Pathology.

HALE, ROBERT B., JR., A.B., M.D. (Vanderbilt University School of Medicine). Clinical Assistant Professor of Pediatrics.

HALL, GARLAND C., JR., B.S., M.D. (University of Alabama School of Medicine). Family Medicine.

HALL, JOE E., M.D. (University of Alabama School of Medicine). Family Medicine.

HALL, RANDALL L., B.S., M.D. (University of Alabama School of Medicine). Family Medicine.

HANEY, WILLIAM K., M.D. (Indiana University School of Medicine). Psychiatry.

HARRIS, LEROY, M.D. (University of Iowa College of Medicine). Clinical Assistant Professor of Internal Medicine.

HAWS, FRANK, M.D. (University of Tennessee College of Medicine, Memphis). Clinical Associate Professor of Surgery - Neurosurgery.

HAY, S. HUTSON, B.A., M.D. (University of Tennessee College of Medicine). Clinical Assistant Professor of Surgery - Ophthalmology.

HEWETT, BILL V., B.S., M.D. (University of Texas Medical School at Galveston). Radiology.

HINDMAN, JEFFREY C., B.S., M.D. (University of Illinois at Chicago). Clinical Assistant Professor of Surgery.

HINTON, BENJAMIN, B.S., M.D. (Medical College of Alabama). Clinical Assistant Professor of Pediatrics.

HOOD, CHARLES, B.S., M.D. (Vanderbilt University School of Medicine). Family Medicine - Internal Medicine.


HUBER, DONALD S., A.B., M.D. (Duke University School of Medicine). Internal Medicine.

JACKSON, JAMES E., B.A., B.S., M.D. (Medical College of Alabama). Clinical Assistant Professor of Internal Medicine.

JOHNSON, EDWARD M., M.D.(Col.) (St. Louis University). Clinical Associate Professor of Obstetrics and Gynecology.


KING, BENJAMIN R., B.S., M.D. (University of Alabama School of Medicine). Surgery.

KINNANE, HARRY E., M.D. (Medical College of Alabama). Lecturer in Psychiatry.

KINZER, CLAUDE L., B.S., M.D. (University of Tennessee College of Medicine). Clinical Assistant Professor of Family Medicine.

KINZER, GILBERT M., B.A., M.D. (University of Tennessee College of Medicine). Clinical Associate Professor of Family Medicine.
KNOX, GEORGE E., M.D. (University of Tennessee College of Medicine). Internal Medicine.

KOHAUT, EDWARD C., B.S., M.D. (New Jersey College of Medicine). Clinical Associate Professor of Pediatrics.

LAMPERT, RALPH J., B.A., M.D. (Louisiana State University School of Medicine). Pathology.

LANCASTER, J. ROBERT., M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Surgery.

LANDERS, KAREN B., B.S., M.D. (University of Alabama School of Medicine). Pediatrics.

LARY, JOHN HOWARD, JR., B.S., M.D. (Tulane University School of Medicine). Internal Medicine.


LE GRAND, PAUL, B.S., M.D. (University of Alabama School of Medicine). Internal Medicine.

LETSON, LOUIS E., B.S., M.D. (Medical College of Alabama). Family Medicine.

LEWIS, THOMAS K., M.D. (Emory University School of Medicine). Psychiatry.

LIDDON, SIM C., B.A., M.D. (The Johns Hopkins University School of Medicine). Clinical Associate Professor of Psychiatry.

MARTINEC, LEONARD W., B.S., M.D. (University of Mississippi School of Medicine). Family Medicine.

MAXWELL, OSCAR N., M.D. (Medical College of Georgia). Clinical Assistant Professor of Surgery - Otolaryngology.

MAYNOR, ROBERT C., JR., B.S., M.D. (University of Mississippi School of Medicine). Surgery - Ophthalmology.

MC CORMICK, LONNIE G., M.D. (University of Tennessee College of Medicine). Radiology.

MC DONALD, CLYDE C., M.D. (Louisiana State University School of Medicine). Clinical Assistant Professor of Surgery - Colon and Rectal Surgery.

MC GEHEE, THOMAS F., JR., B.S., M.D. (University of Tennessee College of Medicine). Pediatrics.

MC MURRAY, JAMES, B.S.E., M.D. (University of Mississippi School of Medicine). Surgery - Urology.

MEDENBACH, KLAUS F., M.D. (University of Mainz, Germany). Surgery - Urology.

MEIMAN, GREGORY, B.A., M.D. (Indiana University School of Medicine). Family Medicine.


MILAM, WILLIAM M., B.S., M.D. (University of Tennessee College of Medicine). Family Medicine.

MILES, GERALD PAUL, B.S., M.D. (Medical College of Alabama). Clinical Assistant Professor of Pediatrics.

MILLER, HOWARD G., A.B., M.D. (University of Alabama School of Medicine). Clinical Instructor of Surgery - Orthopedics.

MOORE, BILLY SAM, B.A., M.D. (Vanderbilt University School of Medicine). Pathology.

MOORMAN, ROBERT S., JR., B.A., M.D. (Vanderbilt University School of Medicine). Clinical Assistant Professor of Surgery - Ophthalmology.

MOQUIN, CLAY, B.S., M.D. (University of Alabama School of Medicine). Family Medicine.

MORLEY, R. CHARLES, B.S., M.D. (University of Texas Medical School at Galveston). Surgery - Orthopedics.

MOSLEY, EVERETT C., B.A., M.D. (George Washington University School of Medicine and Health Sciences). Clinical Assistant Professor of Surgery - Anesthesiology.

NORWOOD, ESTON G., A.B., M.D. (Medical University of South Carolina College of Medicine). Clinical Assistant Professor of Family Medicine - Internal Medicine.

OWEN, ALFRED P., A.B., M.D. (Louisiana State University School of Medicine). Clinical Assistant Professor of Obstetrics and Gynecology.


PAGEL, JAMES F., JR., B.S., M.D. (University of Alabama School of Medicine). Family Medicine.

PATTERSON, HAROLD EUGENE, A.B., M.D. (George Washington University School of Medicine and Health Sciences). Clinical Assistant Professor of Pediatrics.

PATTERSON, TERESA M., B.S., M.D. (University of the Philippines School of Medicine). Clinical Assistant Professor of Pediatrics.

PATTERSON, WILLIAM D., B.A., M.D. (Vanderbilt University School of Medicine). Clinical Assistant Professor of Internal Medicine.

PEELER, MILTON B., B.A., M.D. (Vanderbilt University School of Medicine). Clinical Assistant Professor of Pediatrics.

PERRIN, FRANCIS M., B.S., M.D. (Union Theological Seminary). Psychiatry.

PERRY, BRIAN A., B.S., M.D. (University of Alabama School of Medicine). Family Medicine.

PETE RSON, MARK, B.A., M.D. (Northwestern University School of Medicine, Chicago). Psychiatry.

PHILLIPS, R. MACON, B.S., M.D. (Medical College of Virginia). Clinical Assistant Professor of Internal Medicine.

PIERSMA, JOHN D., A.B., M.D. (University of Alabama School of Medicine). Clinical Assistant Professor of Family Medicine.

PITT, C. KERMIT, M.D. (Tulane University School of Medicine). Clinical Professor of Pediatrics.

PUGH, PAUL M., B.S., M.H.A. (Baylor University). Family Medicine - Hospital Administration.

QURESHI, NAUMAN, F.Sc., M.D. (King Edward Medical College, Pakistan). Internal Medicine - Nephrology.

RATCLIFFE, ALFRED, JR., B.S., M.D. (Medical College of Virginia). Family Medicine.

RAY, H. COTTON, M.D. (University of Tennessee College of Medicine). Clinical Associate Professor of Radiology and Pediatrics.

REDDY, V. HARANATHA, B.Sc., M.B.B.S. (Kakatiya Medical College, India). Clinical Assistant Professor of Pediatrics.

REYNOLDS, DALLAS B., A.B., M.D. (Vanderbilt University School of Medicine). Clinical Associate Professor of Obstetrics and Gynecology.

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THOMPSON, NOBLE, B.S., M.H.A. (University of Alabama). Lecturer in Family Medicine - Health Administration.

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VANKINENI, PRASAD, M.B.B.S. (Gunter Medical College, India). Internal Medicine - Gastroenterology.

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WINN, ROBERT M., A.B., M.D. (State University of New York Downstate Medical Center College of Medicine). Clinical Instructor in Pathology.

WOOD, ROBERT V., B.S., M.D. (Medical College of Alabama). Pediatrics.

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WRIGHT, THOMAS W., B.A., M.D. (Vanderbilt University School of Medicine). Surgery.

YOUNG, LOWRY ROY, JR., M.D. (University of Tennessee College of Medicine). Radiology.

YU, PETER S.K., B.A., M.D. (Saint Louis University School of Medicine). Clinical Assistant Professor of Surgery - Thoracic and Cardiovascular Surgery.
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